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PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

Vol. 111, No. 1 Thursday, July 4, 1940 Price Ten Cents

International Paper Files 32 Million Offer

Registration Statement Covering $32,000,000 Issue of First Mortgage Bonds Filed By International Paper Co. With Securities and Exchange Commission — Merger of Southern Kraft In Prospect.

The International Paper Company filed on July 1 with the Securities and Exchange Commission in Washington, a registration statement covering a $32,000,000 issue of first mortgage bonds due July 1, 1955, to be underwritten by a group headed by The First Boston Corporation and Smith, Barney & Company.

To Retire Funded Debt

The registration statement indicates that proceeds of the new bonds and of $12,000,000 new 6 year serial notes to be taken by banks and $8,000,000 first mortgage bonds of Hudson River Power Company to be placed privately with insurance companies, would be applied to retire substantially all funded debt of International Paper Company and its subsidiaries in the United States. The issues to be eliminated include International Paper Company's $14,257,000 5 per cent first and refunding mortgage bonds due 1947, $14,722,000 refunding mortgage 6 per cent bonds due 1955 and $13,210,000 secured sinking fund and serial notes, as well as Southern Kraft Corporation's $11,260,000 first leasehold and general mortgage bonds, 4¼ per cent series due 1946. The above amounts are the amounts outstanding at December 31, 1939. To date in 1940 they have been reduced to some extent by sinking funds, serial maturities etc.

Southern Kraft Co. To Be Merged

Prior to the issue of the new first mortgage bonds, Southern Kraft Corporation would be merged into International Paper Company. American Realty Company, which has extensive timberlands in New England, is being presently merged into International Paper Company. On completion of these mergers International Paper Company will own directly over 93 per cent of all the properties controlled by it in the United States.

To Be Secured by Direct First Mortgage

The proposed new bond issue would be secured by a direct first mortgage on substantially all the operating properties and appurtenant timberlands to be owned directly by International Paper Company upon completion of these mergers. Excluded from the lien of the mortgage are two small operating mills, five shut down jute board mills and certain timberlands and small properties, none of which are considered important in connection with the Company's operations.

First Mortgage Bonds To Be Resold

The International Paper Company first and refunding mortgage 5 per cent bonds due 1947 are the assumed obligation of Hudson River Power Corporation, formerly International Hydro-Electric Corporation, an International Hydro-Electric System subsidiary, which in 1931 acquired from International Paper Company the bulk of the paper company's directly-owned power properties. Hudson River Power Company will raise funds for the redemption of these bonds and of $335,000 6 per cent refunding mortgage bonds of Ticonderoga Pulp and Paper Company by sale to International Paper Company of $8,000,000 of 3½ first mortgage sinking fund bonds due 1958 and $7,000,000 of 4 per cent second mortgage bonds due 1962. The registration statement indicates that the first mortgage bonds would be resold to insurance companies privately and that the second mortgage bonds would be held by International Paper Company. Applications for the governmental approvals necessary for these two bond issues have already been filed.

Funded Debt of International Simplified

The funded debt of International Paper Company would be greatly simplified by this refunding operation. Upon completion of the financing, the only funded debt of International Paper Company and its United States subsidiaries would be the $32,000,000 new first mortgage bonds, the $12,000,000 serial notes and a few minor divisional obligations. Bonds of Canadian subsidiaries would remain undisturbed.

In view of present unsettled market conditions it is understood that the offering date has not yet been set but that the Company and the underwriters feel that it is advisable to file the registration statement in order to facilitate the offering of the new bonds to the public promptly whenever the necessary governmental approvals have been obtained and market conditions may permit.

Mills Increase Wages in New Trade Pacts

Flat Increase of Two Cents Per Hour Embodied In New Worker Contracts Signed By Thilmany Pulp & Paper Co. and Nekoosa - Edwards Paper Co.—J. M. Conway On Employment Stabilization — Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., July 1, 1940—Wage increases are embodied in new contracts executed with labor unions by the Thilmany Pulp and Paper Company, Kaukauna, Wis., and the Nekoosa-Edwards Paper Company, Port Edwards, Wis.

The new Thilmany contract with the International Brotherhood of Papermakers and the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, provides for a flat increase of two cents per hour in all wage rates, according to L. C. Smith, personnel director. Included in the agreement was a new provision granting one week's vacation with pay to employees with ten years or more of service. Employees who have worked over three years but under ten years will be given three days' vacation with pay. The contract is for one year beginning June 1, 1940.

Workers Favor All-Union Pact

Recently the management of the Nekoosa-Edwards Paper Company announced that it would execute an all-union agreement if 75 per cent of the employees favored it. An election was held among the 1,094 employees of the Port Edwards and Nekoosa mills, reculting in a vote of 953 favoring the plan, 102 against it, and 39 not voting. Since this indicated 87 per cent in favor, the company met with union representatives and agreed on the contract.

The agreement provides for an increase of two cents per hour in the base common labor rate, raising the rate to 50 cents effective as of June 1. An all-union shop policy will prevail, under which present employees will have until August 15 to affiliate, and new employees will be given sixty days in which to join. The contract was submitted at a general meeting of all workers at the high school gymnasium last week and was accepted.

Representatives Sign Contract

Representing the company at the formal signing of the contract were John E. Alexander, president and general manager, F. R. Rosebush, employment relations manager, and Charles H. Reese, company mill manager. The unions were represented by A. J. Hayes, Milwaukee, Wis., and Harold Olson, Port Edwards, for the International Association of Machinists; Emil Noren, Wausau, Wis., and Gerald Stone, Nekoosa, for the International Brotherhood of Papermakers, and Rasmus Anderson, Green Bay, Wis., and Herman Osberg, Port Edwards, for the International Brotherhood of Pulp, Sulphite and Paper Mill Workers.

J. M. Conway Speaks on Employment

J. M. Conway, president of the Hoberg Paper Mills, Inc., Green Bay, Wis., and president of the Wisconsin Manufacturers Association, was one of the speakers at a statewide conference on employment stabilization at Milwaukee, Wis., recently. The conference was held jointly by the manufacturers' association, the American Legion and the Wisconsin State Federation of Labor.

The principal concern of the meeting was the retention of Wisconsin's present unemployment compensation law. Voyta Wrabetz of Madison, Wis., chairman of the Wisconsin Industrial Commission declared in an address that powerful forces both in Congress and in Wisconsin are trying to scuttle the law.

"There are several bills in Congress," Mr. Wrabetz said, "which, if they become law, would for all practical purposes strike a death blow to Wisconsin's type of unemployment compensation law. The forces behind these bills work on the premise that employment stabilization is an idle dream; there are those who, with only a brief few years of experience, are so omniscient in their judgment of values that they have already entered a verdict that our system is bad and sinful and should not be permitted."

The Wisconsin law is based on merit rating of employers. Payroll taxes are allocated to each contributor, and unemployment benefits are paid out of the accumulation for each specific firm. The payroll taxes are gradually decreased as the funds accumulate, and some industries pay nothing at all because their maximum deposits have been reached, and they have so stabilized employment they are making no withdrawals. The substitute plan being attempted is the pooling of all contributions in one fund from which benefits are paid, doing away with the merit system. The cooperation of all employers was asked to help retain the present law.

Most of the paper mills and allied industries of the state were represented at the conference.

Work on New Dam Progressing

Construction is well under way on the new "upper" dam on the Fox River at Appleton, Wis., supplying water power to various paper mills. Pouring of concrete for the 18-foot sluice piers has been completed, after which the concrete work on the 486-foot spillway will be started. Total length of the combined sluiceway, spillway and abutments will be 721 feet, and eight steel sluice gates measuring 20 by 14 feet will be installed. The total project will cost about $120,000, and the work is being done by C. R. Meyer & Sons Company, Oshkosh, Wis. The dam is being built 20 feet below the old one, using the old spillway as a coffer dam. It will be completed about November 1. This is the last of nine obsolete dams on the lower Fox River to be replaced by the government.

Wolf River Project Again Postponed

The hearing which was scheduled by the Wisconsin Public Service Commission at Antigo, Wis., June 14 on construction of a storage reservoir on the upper Wolf River at Lily, Wis., has been postponed until

August 20. It will then take place at Madison, Wis. The application for construction was made by the Wolf River Reservoir Company, whose purpose is to impound a large amount of flood waters for use during the summer drought period by water power owners on the Fox River.

Appeals for Tax Reduction

Southern Kraft Corporation has appealed to the board of review for a reduction in the assessment of its property in Menominee, Mich. The corporation is assessed $359,000 for its dams and buildings and contends the amount is too high. Its properties at Marinette, Wis., are assessed at $710,000.

F. J. Sensenbrenner Makes Gifts

F. J. Sensenbrenner, president of Kimberly-Clark Corporation, Neenah, Wis., has made the University of Wisconsin a gift of $25,000, one of four like amounts to bring the Pro-Arte String Quartette of Brussels, Belgium, to the campus during the next school year, for teaching and performances throughout the state. The group is described as the most famous of its kind in the world. Mr. Sensenbrenner is a member of the university board of regents.

J. P. Zelinski Honored

Joseph P. Zelinski, general manager of the Wisconsin Tissue Mills, was honored at a banquet recently for completion of 25 years of service with the company. He was presented with a gold watch by officials of the firm.

Younger-Nabbefeld Nuptials

John Younger, technical assistant at the Institute of Paper Chemistry, Appleton, Wis., and Miss Helen Nabbefeld of Appleton, were married June 15 at the parsonage of St. Mary Church at Menasha, Wis. Mr. Younger is a graduate of Lawrence College. The couple will reside at Waverly Beach, Appleton, for the summer.

Controlled Chip Length

Waste of wood from improper care and operation of chippers is enormous. Hitherto, there has been no practical, easy and reliable means of controlling this. A few sporadic tests made by the chemist on small samples screened by hand, is a waste of time. The shaking time as well as the nature of the shake must be automatically controlled in order to give results which are comparative. A mechanical shaking device for chips should be motor driven and provided with Mark Time switch, eliminating any possible personal element.

The Williams Apparatus Company, Watertown, N. Y., announces a new chip classifier having a capacity for an adequate sample of at least a cubic foot, which quickly determines the exact percentage, not only of oversize chips and sawdust but also the proportions of the various lengths of chips passing screens of standard mesh of wire.

It is sturdily built of welded steel construction with nothing to shake loose and should last a lifetime. The stack of screens, each 24 x 24 x 4 inches deep, conform to the exact specifications as to mesh and diameter of wire, of ASTM and U. S. Bureau of Standards.

In actual cases, wood losses have been reduced from 18 and 19 per cent to 5 and 6 per cent.

Foreign Pulp Situation Discussed

In speaking on the current Scandinavian pulp situation at the luncheon of the Salesmen's Association of the Paper Industry, New York, Johannes Westergaard, vice-president of Atterbury Brothers, and president of the American Wood Pulp Importers Association, said in part: "Norway is completely under German domination. The mills are intact, but there seems to be no way for her to export any pulp to the United States for the duration of the war. Sweden, although independent, is in much the same situation as Norway with respect to pulp exports. Negotiations with Germany and Great Britain to permit shipments out of the Baltic to the United States have so far failed. Finland is also bottled up except for the port of Petsamo in the Arctic. This port is 200 miles away from the nearest pulp mill and 400 to 500 miles away from most of the mills remaining in Finnish control. It can only be reached by truck over a narrow gravel road. If heavier than three ton loads are trucked over this road, it would soon be cut up so badly as to become impassable, so that very little pulp can be expected to come out by this route. One boat is loading there now.

"There are several difficulties encountered in getting pulp out of the Scandinavian countries aside from the scarcity of boats. Cash cannot be sent to Norway since this is prohibited by the American Neutrality Law, and the mills apparently have to demand cash in advance of shipment. Insurance premiums are very high—about 12½ per cent or 8 to 9 dollars per ton. Ocean freights are very high, probably around 15 dollars per ton. The difficulty of securing much additional pulp from Canada is that her surplus is urgently needed by England.

"On June 1st, there were slightly more than 200,000 tons of pulp on the docks—all owned by U. S. paper mills. Assuming that these stocks are used up at the rate of 50,000 tons a month, which is conservative, there is only a four months' supply in sight. From present indications the situation will begin to get serious by August or September and if the war continues, will become progressively worse each month thereafter.

"If the conflict should end suddenly, the chances are that the urgent demand for pulp and paper all over Europe would take up a major part of the pulp that could be produced by the Scandinavian countries for some time, so that there would be little likelihood of any sudden flood of European pulp into this market."

Cleveland Container Starts New Plant

The Cleveland Container Company, nationally known industry engaged in the manufacture of paper tubes, paper cans and cores, has started operations in building No. 14 of the Michelin Tire Company, New Brunswick, N. J.

The concern has leased 20,000 feet of floor space from the Michelin Company and installed modern machinery for the manufacture of paper products. Fifteen hands have been employed and gradually the personnel will be increased until 100 to 150 are given employment.

W. F. Walker of Cleveland, president, visited the Milltown plant this week and witnessed the plant in operation for the first time. The company has plants in New York, Philadelphia, Detroit, Cleveland and Plymouth, Wis.

Future of Newsprint Production Uncertain

Canadian Output Now Near 86 Per Cent of Capacity But European Conflict Makes Newsprint Production In Future Unpredictable — Value of Pulpwood Exports Higher — Possibilities of New Products Studied.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., July 1, 1940—While the newsprint mills of Canada are now working at some 85 or 86 per cent of capacity, as compared with 66.4 per cent a year ago, the future course of production is still a big question mark, with prospective complications that none can foresee. There is first the question of how long the conflict will last, and what will be the conditions when peace is restored. The swift march of events have brought problems of more immediate concern. For instance, with the collapse of France, the newsprint order placed by French newspapers for 50,000 tons of newsprint from Canada seems to have gone by the board, although payment was guaranteed through deposit on this side of the necessary fund.

Future Delivery May Be Difficult

Next the question arises as to whether or not the 350,000 long tons of newsprint which British firms had contracted for with Canadian and Newfoundland mills will be fully delivered if Britain is subjected to intensified attacks by Germany. These two contracts are, of course, of relatively small proportions, amounting together to no more than one month's production by Canadian mills. But they illustrate the growing complexities of the outlook. Meanwhile production continues to be intensified. For the first six months of the present year total production has been around 1,652,000 tons, as compared with 1,341,004 tons for the similar period of 1939, an increase of some 311,000 tons.

Exports of Pulpwood

From Saint John, N. B., comes the report that many provincial shippers of pulpwood have found an export market in the United States and, whilst this is not new, the movement across the border, this year, is heavier than usual. The bulk of these exports go to paper mills in the State of Maine, just across the border. Most of the wood being shipped, at present, is winter-cut although summer cutting is now well under way. One firm has already shipped some thousand cords of winter cut pulpwood to the United States.

Do Not Reflect Any Increase

Government returns do not reflect any increase in the general export of pulpwood from Canada, but rather the reverse. Thus in May 39,084 cords of pulpwood were exported as compared with 41,919 cords in May, 1939. However, the value was higher, being $384,028, as compared with $365,120.

New Forest Products Industries

Considerable attention is being paid to the question of establishing new forest products industries in Canada to supply commodities hitherto imported from abroad. For instance, a government department in New Brunswick has been devoting attention to the establishment of plants for the production of such commodities as charcoal, pine oil, creosote, turpentine, resin, etc., and is in negotiation with prospective manufacturers of these products.

Frederick A. Laird Dead

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., June 17, 1940—The sudden death has occurred here of Frederick A. Laird, assistant treasurer of the Canadian International Paper Company, in his 51st year. He had been in indifferent health for some time past, but his passing was quite unexpected.

A native of Montreal, Mr. Laird was the third son of the late Mr. and Mrs. Robert Laird. He spent his childhood and part of his adult life in Portland, Me., where his father was connected with the Grand Trunk Railway. He was educated in Portland and was prominent in sports there.

Following business experience gained in Portland and in Manchester, N. H., Mr. Laird joined the Portland staff of the American Realty Company, a subsidiary of International Paper Company, in 1913. In 1925, he was called to the head office in New York to take charge of the woodlands accounting. Ten years later, he came to the head office of the Canadian International Paper Company and affiliated companies in Montreal, where he became assistant treasurer, the position he held at the time of his death.

Mr. Laird is survived by his widow, the former Bertha E. Pierce of Portland, Me., two daughters, Mrs. C. N. Canse, of West Orange, N. J., and Mrs. J. G. McNames, of North Hollywood, Calif., a brother, Frank H. Laird, of Auburn, Me., and one granddaughter.

C. P. Robinson Goes With Kidder

The Kidder Press Company, Inc. of Dover, N. H., announces the appointment of C. P. Robinson of the Graybar building, New York City, as a special representative for its slitters and roll winders to paper mills in the United States.

Mr. Robinson is very well known in the industry. He is a member of TAPPI, and has devoted more than twenty years to organizing and developing sales of wood pulp, and pulp and paper mill supplies throughout Canada and this country. He travels extensively every year and last year covered over forty thousand miles in his visits to the paper mills.

Members attending the Superintendents' Convention in Cincinnati this month will recall his instructive paper on "chipper knives."

The Kidder line includes the Super-speed Slitter and Roll Winder, a shear cut machine operating at 2,000 feet per minute; the C. W. (center wind model); the S.L.N. model (light weight, surface winding) and a surface winding midget model slitter for small diameter rolls and ribbon slitting.

Midwest Paper Trade Continues to Expand

Demand For All Paper and Paper Products Showing Improvement With Specialties Active and Higher — Paper Stock Market Stronger With Mixed Papers Firm—Container Simplification Approved — Other News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., July 1, 1940—The Chicago paper market continued to hold all gains made last week with the general market actually showing expansion and improvement from a demand viewpoint. Reports that shipments of pulp from foreign countries might be resumed in the very near future, even though on a curtailed basis, were offset by continued demands for pulp from belligerent countries to combat any possibility that the market might be "eased". A bellwether of further strengthening of various markets is found in the waste paper market locally, where most grades either held very firm or advanced to higher levels as indicative of the general feeling as to raw materials. Mixed papers showed more strength and folding news, though the reports were somewhat spotty, was showing the way into higher ground. The big range in kraft prices continued and virtually all grades combined to give an even more accurate picture of the market than the actual prices. Book and cover papers were reported very strong. Sulphites were consolidating recent movements into higher positions with demand running "quite satisfactory". Groundwoods were in good demand as were newsprints. Paper bags and specialties made the headlines last week through marked increases.

Simplification Standards Adopted

The cup and container industry is reported to have approved recently recommended simplification practice recommendations for heavy-duty, round, paper food and beverage containers and the new recommendations have already gone into effect with mimeographed copies now available and to be followed by printed information no later than September 1. The announcement comes to the Chicago trade through the National Bureau of Standards and the Cup & Container Institute, representing the industry, is reported to have adopted the recommendations believing that they will aid in eliminating containers too light in weight to give the general consuming public adequate service. Excessively heavy containers for which there are no present requirements would also be done away with through adoption of the Bureau of Standards recommendation.

Salesmen Enjoy Golf Outing

The Salesmen's Association of the Paper Industry, western division, enjoyed its second golf outing of the current summer season on Friday, June 21, when over 70 salesmen and guests responded to the invitation of Chairman "Pat" Patterson to attend the event held at the Park Ridge Country Club. On the day's program, blessed by perfect Spring weather, was the informal luncheon, golf with plenty of prizes and an evening dinner followed by informal entertainment with singing teacher "Jim" Coy on deck for the ceremonies. Ed Rolaine of Mosinee, assistant golf chairman, handled the scoring and other preliminaries and details.

New Roll-Truck for Paper

The Barrett-Cravens Company of Chicago has recently given considerable publicity to a new roll-truck designed to materially aid in the handling of paper rolls in mills, pressrooms and warehouses. The company has prepared catalog and other descriptive data on the roll-truck which is of all-steel construction, adequately re-inforced and built with units consisting of two vertical supporting members toothed to engage the spindle supporting arms for adjustment within the available range from 48 inches to 96 inches in diameter. The front wheels are described as 9 inches in diameter and the wheels which swivel are 4 inches in diameter. The roll-trucks are announced as available to the industry in three sizes—36, 42 and 48 inches inside clearance.

Walker, Goulard, Plehn Hold Outing

The eighth annual outing, of the Walker, Goulard, Plehn Company was held on June 22, 1940 at the Narragansett Inn, Lindenhurst, L. I. The attendance was the largest ever recorded at one of these affairs.

Americanism was the keynote of the various speakers' addresses. Time out, was taken from the festivities, to give a thought to the stricken peoples of Europe and contributions were asked for their aid, through the medium of the American Red Cross Society. The sum of forty dollars was realized for that worthy cause.

Favored with exceptionally good weather, a fine program of outdoor games provided entertainment for the whole group. Two Soft Ball games were held. The export department defeated the domestic department in a hotly contested game, but bowed to the visitors' team in an overtime game by the score of 7 to 8.

Prizes were won by Messrs. Woolsey, Bernhardt and the Lynch Brothers. Winners of the prizes in the contests held for ladies were Misses Burghardt, Dunn and Vopasek. Suppertime was enlivened by an amateur hour, and a surprising amount of fine talent was revealed. Dancing continued well into the evening and a tired happy crowd left for home with the feeling of a day well spent.

Certify Brotherhood for Race Bros.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 3, 1940—National Labor Relations Board has announced certification of International Brotherhood of Pulp, Sulphite and Paper Mill Workers, Local 286, (AFL), as the sole collective bargaining agency selected by a majority of the regular production and maintenance employees of Race Brothers, Philadelphia, Pa.

Board action was based upon a secret ballot election held June 4 resulting in a count of 13 votes for the AFL union and three votes for United Paper Workers of America, (CIO).

Philadelphia Paper and Cordage Men Meet

Vote Is Approved To Limit Membership In the Association To 125—Carew Mfg. Co., Fox River Paper Co. and Sorg Paper Co. Are Elected To Membership—Association Holds Annual Outing—The Prize Winners.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., July 1, 1940—At the regular monthly meeting of the Philadelphia Paper and Cordage Association held at the Arcadia Restaurant, June 21, which is the last meeting until September, J. R. Howarth, chairman of the membership committee, presented three new applications for membership and these were unanimously approved. The new members proposed are: Carew Manufacturing Company, South Hadley Falls, Mass., represented by Constant Southworth; Fox River Paper Company,

PAPER MEN PLAY GOLF

From left to right—Howard Satterthwaite, Schuylkill Paper Company; Ed. Schwartz, Aatell & Jones; J. F. McFerren, Aatell & Jones and Charles Gordon, Nashua River Paper Company.

Appleton, Wis., represented by Donald S. Dilpatric; The Sorg Paper Company, Middletown, Ohio, represented by John Owen and C. J. Nicol.

At this meeting a motion was made, seconded and approved limiting the membership of the association to 125 members. This means that there is a vacancy for only a few more memberships, and after the quota has been reached the association cannot take on a new member only through the collapse of old memberships.

Col. Nicholls Give Interesting Address

The guest speaker at the luncheon was Colonel Joseph Klapp Nicholls, a commanding officer of the 315th Infantry, U. S. A., who spoke on behalf of the American Legion, discussing our National Defense and Foreign Affairs.

Hold Outing at Oreland

The annual outing of the Philadelphia Paper and Cordage Association was held at the Manufacturers Country Club, Oreland, Pa., on Tuesday, June 18. The golfers had a particularly good turnout and most of the scores were unusually low. After an afternoon devoted to contests in golf, tennis, quoits and miscellaneous sports, all those present assembled in the clubhouse and did justice to a very elegant dinner, following which president George K. Hooper addressed the gathering. He stressed good fellowship, for which the association stands, and emphasized the opportunity for constantly raising the ethics in the paper and cordage industry through social meetings between competitors. He added that we should be particularly proud in these days of worldly stress to be able to get together and glorify in our freedom of action in business and civil life. Said Mr. Hooper: "It is during strenuous times such as these that an organization like the Philadelphia Paper and Cordage Association proves its value, for nowhere on earth does anyone have the opportunity to cooperate individually as we do."

Jack Shinners Is Host

Jack Shinners, who was host at this outing, awarded the prizes for the day's contest. The low gross championship was won by Howard Bancroft of Independent Twine and Yarn Company. His gross score for the day was 80; he was awarded the Schuylkill Paper trophy and will retain it for one year. Mr. Bancroft is a second time winner of the trophy, having won it in 1934. The second low gross winner was a guest, M. G. Foraker, with a score of 82 and another guest J. R. Shaw won the low net as well as the third low gross prize. The most important of the golf prizes was won by J. H. Schwarts of Aatell & Jones Company, who boasted a score of 205, the highest score turned in. Ed. Chaney of Dunlop Printing Company won the kickers handicap prize. In tennis, Dick Gifford battled it out with Jack Shinners and won the association championship.

Closely Contested Matches

The quoit matches were very closely contested with Caroll Gardiner, representing Groveton Paper Company, and the Hendle Wax Paper Company, winning from Thomas Flockhart of Holyoke Card and Paper Company, and George K. Hooper of the Hooper Paper and Twine Company.

Door prizes were won by Dick Richards of Buffalo Envelope Company, J. Howard Bancroft of Independent Twine and Yarn Company, M. J. Rhon of A. S. Datz Company, V. J. Sherlock of J. R. Howarth Paper Company, Den Garvey of Acme Specialty Sales Company, Everett Hoffman of J. E. Fricke Company, E. K. Lay of E. K. Lay Company, and J. F. McFerren of Aatell & Jones Company.

Sweden Adheres to Centre of Forestry

The Royal Government of Sweden notified her adhesion to the International Centre of Forestry in May 1940 and appointed as Delegate to the Committee of the Centre F. Aminoff, Chief of the Section at the Direction of the Domain.

River Raisin Paper Co. Modernizes Stock Preparation Department

One of the most interesting modernization programs of recent years involving paper stock preparation is being undertaken by the River Raisin Paper Company, Monroe, Mich. This mill has a capacity of 500 tons per day and manufactures chip boards, box and container boards, solid and corrugated shipping containers on four multicylinder board machines and one single cylinder straw machine.

For many years the stock for these various board grades has been prepared in the conventional methods involving breaker beaters, finishing beaters and jordans. Some months ago C. L. Wood, vice-president and general manager of the River Raisin Paper Company announced plans for bringing their stock preparation equipment up to date and as a first step, a complete Hydrapulper system was purchased from Dilts Machine Works, Inc., Fulton, N. Y. for use in the preparation of the filler stock for No. 4 paper machine. A similar installation is now being made for No. 3 machine.

Dilts Hydrapulper Selected

The Dilts Hydrapulper system was selected after careful consideration. One reason for this selection lay in the completeness and compactness as well as the flexibility of the Hydrapulper system, and all the filler stock for 150 tons per day is prepared in a space something like 30 feet by 40 feet, and in this space is located the Hydrapulper tank, Classifiner, thickener, as well as drives, pumps and trash handling equipment.

One corner of a spacious storage room was selected for the installation and by means of a Clark gasoline-driven "Carloader" the Hydrapulper is furnished quickly by one operator. Due to the flexibility of this Clark truck, stock can be brought to the pulper from the receiving docks or from storage and in between times it is used to stack bales and perform other trucking duties.

FIG. 1.
View of Automatic Ragger Showing Continuous Rope of Rags, Wires, etc.

Hydrapulper Described

The Hydrapulper itself is a development of the Dilts Machine Works, Inc., Fulton, N. Y. and comprises a vertical open top tank with a dished bottom and flush with the bottom is located an extremely heavy rotating disc or impeller on the top surface of which are located a series of vanes for imparting vigorous circulation to the mass of stock as well as rapidly tearing apart freshly furnished bales of waste paper, corrugated and the like. Due to the design of the Hydrapulper it is impossible to plug it and whole bales weighing upwards of 2000 pounds are dropped into it and the baling wires are cut but not removed. The stock is continuously removed through an "extractor ring" around the impeller which is kept free from plugging by means of scrapers attached to the periphery of the impeller. This extractor ring is perforated with holes only ¼ inch in diameter.

The consistency in the Hydrapulper tank is carried lower than is usual in breaker beaters and the bottom of the tank is provided with a slot and a chute through which heavy trash settles out and means are provided for removing this trash from the system without interrupting the operation of the pulper in any way. In a like manner rags, strings, wires, etc. together with entrained cellophane, rubber bands and similar stringy trash are removed continuously in the form of a "rope" by means of a novel ragger reel located on the edge of the pulper tank. This reel is provided with a variable speed drive so that the rate of removal of this stringy trash can be controlled at will, dependent upon how dirty the furnish is. The baling wires go into the Hydrapulper tank along with the paper and these wires entwine with the rags and strings and act to reinforce the "rope" of rags being continuously removed.

Stock Pumped to Cowles Classifiner

As rapidly as the stock is broken up and defibered sufficiently to pass through the ¼ inch holes in the extractor ring it is pumped at high velocity to a Cowles Classifiner also developed by the Dilts Company. The Classifiner is provided with screen plates having ⅛ inch diameter holes and by means of a more recent improvement in its construction the stock is cleaned centrifugally, the heavy dirt being thrown to the outside and the light trash centrifuged to the center where discharge ports are provided for its removal. Between these two reject discharges are located the screen plates in a zone of relatively clean stock. The stock passing the screen plate of the Classifiner goes directly to the thickener and thence to the chest ahead of the paper machine. Good fiber not sufficiently reduced to pass through the ⅛ inch perforations in the Classifiner is discharged with the rejects and after a clarification stage, is passed back

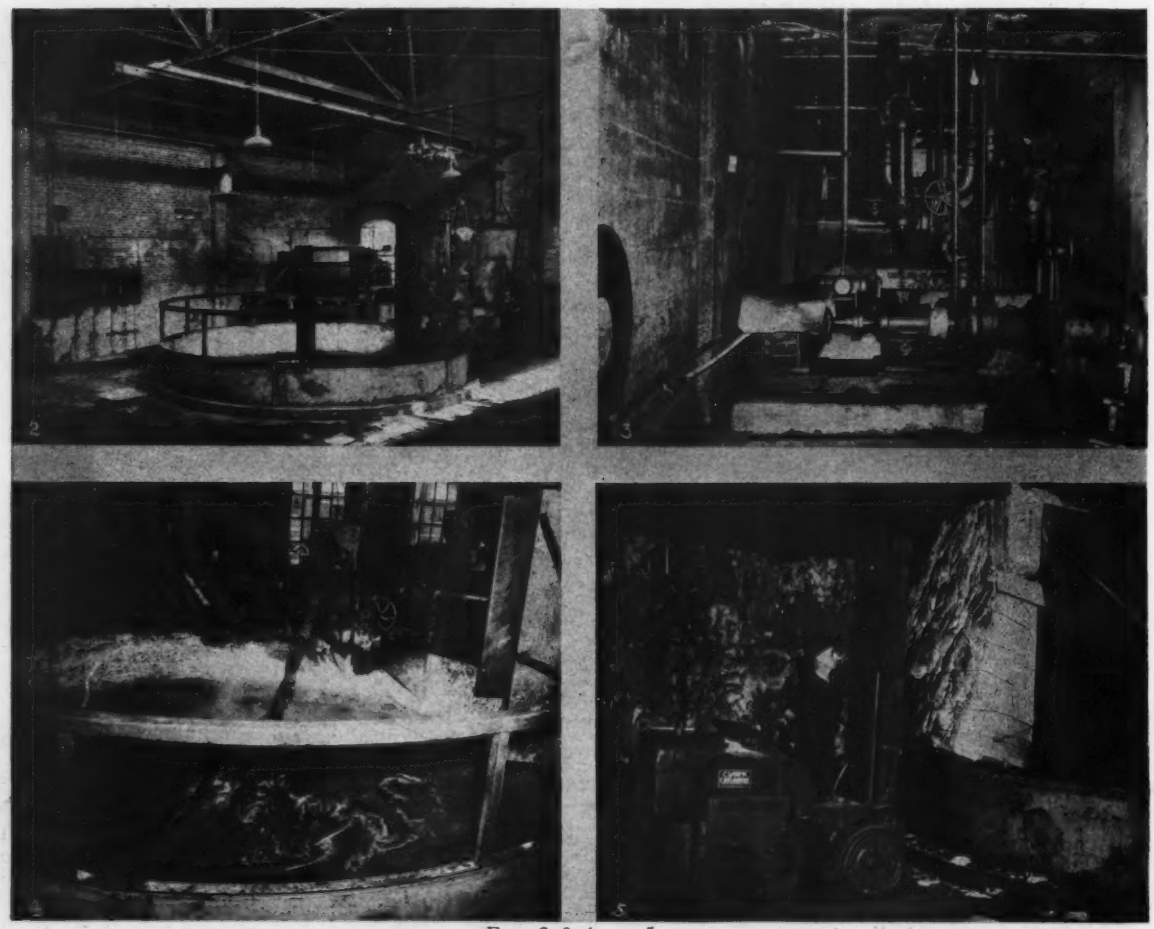
to the pulper tank mixing with the white water from the thickener and with the heated makeup water.

In order to remove the heavy trash settled out at the Hydrapulper as well as the light and heavy rejects from the Classifiner, a Shepard Niles 3-motor hoist fitted with a Hayward Orangepeel bucket is used to dredge out the trash well and clarification tank. A hopper for receiving the trash is located against the wall at one end of the crane rail and is fitted with a door and a chute so that these rejects can be discharged directly to a truck outside the building for carting away.

Several outstanding advantages of the Hydrapulper system for treating filler stock over conventional systems are to be noted: There is flexibility and ease of operation, the continuous removal of rags and the centrifugal separation of heavy non-papermaking materials which delivers a well defibered stock to the thickener cleaned of these foreign materials. The stock in the Hydrapulper is normally carried at 1¾ to 2 per cent consistency so that one 42 x 104 inch thickener is sufficient to bring this stock up to consistency for refining or jordaning. Less thickening capacity is required than in the conventional system and, of course, the method of removing heavy trash eliminates the mussy weekend cleanups necessary where cumbersome settling troughs are installed to accumulate a week's supply of these materials. While the system was designed for River Raisin Paper Company to handle 150 tons per 24 hours it has been operated at the rate of upwards of 180 tons without difficulty, and the entire system operates on approximately 240 hp.

Because all of the stock from the Hydrapulper system has been cleaned and screened through ⅛ inch perforations little additional treatment is required ahead of the paper machine. For this final treatment on filler stock the River Raisin Paper Company installed a Dilts Hydrafiner in series with their jordans. The Hydrafiner is a high capacity unit employing high speed and close clearances to produce thorough defibering with a minimum of cutting and on solid chip board the entire stock requirements has been prepared by the Hydrapulper system and finished through this one Hydrafiner which has permitted the shutting down of a breaker beater, three finishing beaters and three jordans with a resultant saving in power of about 600 hp.

The River Raisin Paper Company deserves credit in undertaking the installation of this most modern equipment and for the progressive step toward simplification of its stock preparation. When the program is completed it is believed this plant will have the most modernized equipment in the country for the production of quality box and container boards.



FIGS. 2, 3, 4 AND 5.

FIG. 2—General View of Hydrapulper Installation. FIG. 3—Hydrapulper Pump and Classifiner Installation Showing Compactness of Units. FIG. 4—Looking into the Hydrapulper Tank Showing Continuous Removal of Rags. FIG. 5—1400 lb. Bale Shown Being Dropped into Hydrapulper Tank without Removing Wires.

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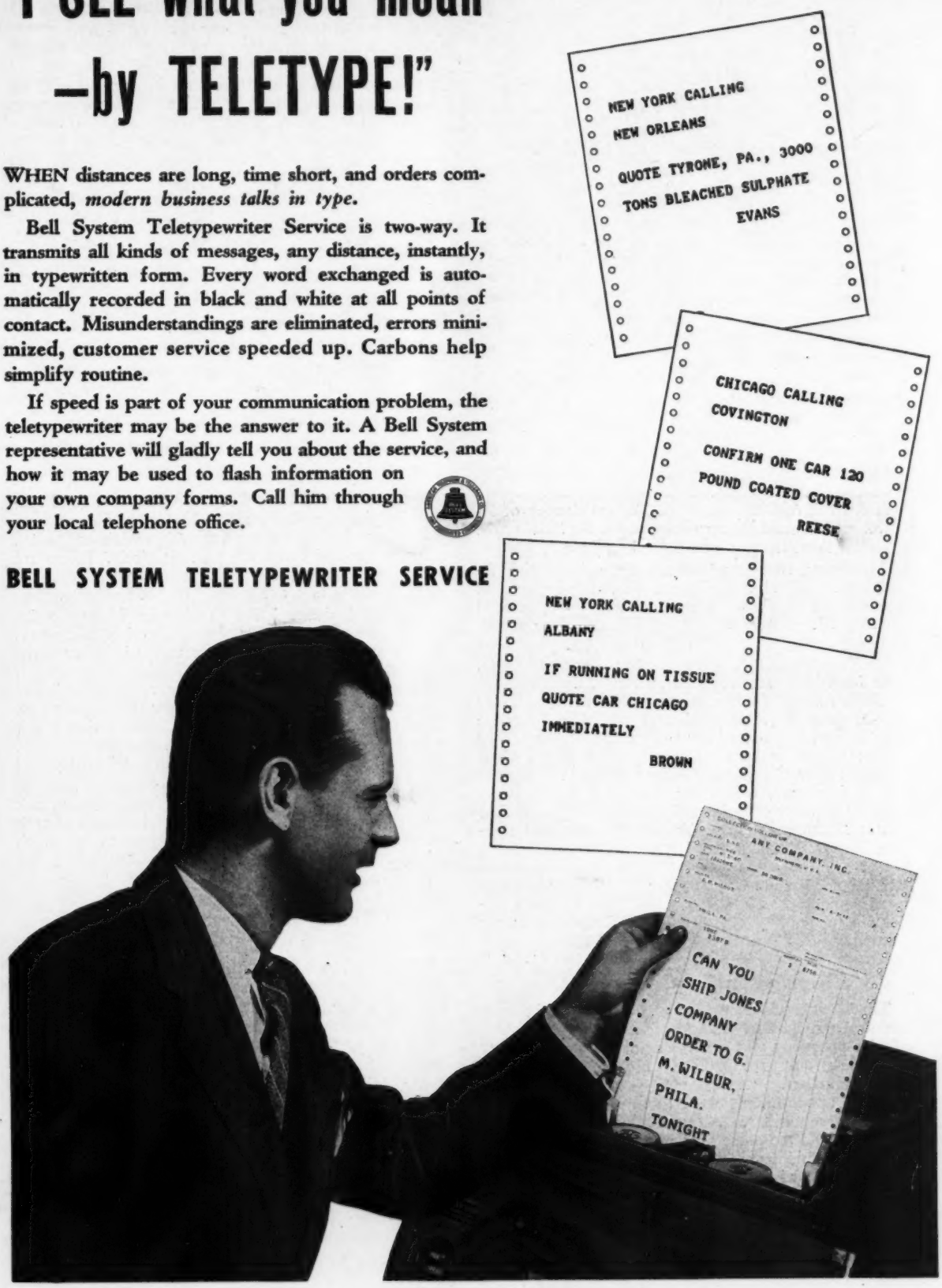


Government Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 3, 1940—Paper Corporation of U. S. has been awarded a contract for furnishing the Government Printing Office with 200,000 pounds of newsprint paper in 48 inch rolls at 3.935 cents, bids for which were received on June 14. Same firm was also awarded a contract for furnishing 40,000 pounds of same in 36 inch rolls at the same price. Other paper awards announced include the following.

Paper Corporation of U. S., will furnish 13,000 pounds (100,000 sheets) of 50 per cent rag, 20 x 25 blue antique cover paper at 9.79 cents. Stanford Paper Company will furnish 55,000 pounds of M. F. book paper in 38 inch rolls at 5.21 cents. Bids for these items were received on June 12.

Barton, Duer & Koch Paper Company will furnish 17,550 pounds (60,000 sheets) various sizes 50 per cent rag, double coated book paper at 13.88 cents. Mudge Paper Company will furnish 40,000 pounds of yellow sulphite writing paper in 32 inch rolls at 5.78 cents. Paper Corporation of U. S., will furnish 8,150 pounds (50,000 sheets) of 28 x 34, 100 per cent rag, white ledger paper at 18.62 cents. Bids for these items were received on June 7.

National Pulp and Paper Company will furnish 320,000 pounds of newsprint paper in 24, 36, and 48 inch rolls at 2.65 cents. Marquette Paper Company will furnish 65,000 pounds (2,000,000 sheets) of 21 x 32 white sulphite manifold paper at 8.04 cents. Bids for these items were received on June 3.

Middlesex Products Corporation, will furnish 5,000 sheets of 24 x 36 brown cloth lined paper at $113.00 per M sheets, bids for which were received on May 31.

Lee Paper Company will furnish 1,438 pounds of 50 per cent rag, 20 x 25 red cover paper at 18 cents, bids for which were received on May 22.

The Printing Office received the following bids for 85,400 pounds (700,000 sheets) of 28 x 34 white sulphite writing paper; Mudge Paper Company, 6.13 cents; Whitaker Paper Company, 5.5 cents; Cauthorne Paper Company, 6.4 cents; R. P. Andrews Paper Company, 6.4 cents; Stanford Paper Company, 6.4 cents; Perkins-Goodwin Company, 5.34 cents; Marquette Paper Company, 6.48 cents; Barton, Duer & Koch Paper Company, 6.16 cents.

For 13,200 pounds (100,000 sheets) of 50 per cent rag, 26 x 34 white bond paper; R. P. Andrews Paper Company, 13.7 cents; Barton, Duer & Koch Paper Company, 15.4 cents; and Old Dominion Paper Company, 12,239 cents.

Norton Co. Changes

The Norton Company board of directors has announced the election of Harry K. Clark to the office of vice-president and general manager, and Andrew B. Holmstrom to the office of vice-president and works manager.

These appointments were to fill vacancies caused by two resignations. Aldus C. Higgins, president, who also held the office of general manager, resigned the general managership, and George N. Jeppson, treasurer and vice-president, who also held the position of works manager, resigned from the office of works manager. Mr. Higgins will retain the office of president and Mr. Jeppson will retain the offices of treasurer and vice-president.

Indianapolis Demand Expands

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., July 1, 1940—With much more seasonable weather prevailing, the local paper trade took new life last week and a considerably larger volume was reported in most lines. The trade generally was delighted to see real summer weather arrive. The change from adverse to good weather was reflected over a wide demand base.

Particularly the building paper demand was increased. After a rather heavy period of buying early in the spring, most dealers had fairly large stocks on hand during most of the bad weather period, but with these having become depleted and unbalanced, they entered the market last week in volume. All building papers and roofings appeared to be in demand. Jobbers say there will be a brisk trade this season from the rural yards, something that was not seen last year to any great extent.

Fine paper jobbers say there has been a slight increase in demand for all sorts of covers, ledgers, books and envelopes. Many of the local printers are working nearly to capacity on work that had been deferred during the rainy and cool season. Others naturally are not so busy, but the total volume is above that of last year and prices are firm.

Demand for summer specialties has increased during the week and the trade is predicting a good season in spite of a slow start. All manner of specialties, including of course the old standbys such as spoons, cups, plates and forks, are moving nicely. Prices are very firm, but little change is expected by local jobbers. Tissues also are moving in good volume.

Increased demand for containers from the ice cream and brewery trade also was noticed last week. Given continued warm weather and it is believed the ice cream demand will be considerably better than it was a year ago. Manufacturers report that more breweries are using paper cases now than a year ago, but the late spring held volume down. Other paper container users are taking about normal requirements. Most local container factories and strawboard plants are working nearly to capacity.

Little change was seen last week in the paper stock or rag demand. However, the level is above what it was a month ago and prices appear to be much firmer. Local warehouses are fairly well filled, but not so crowded as they have been.

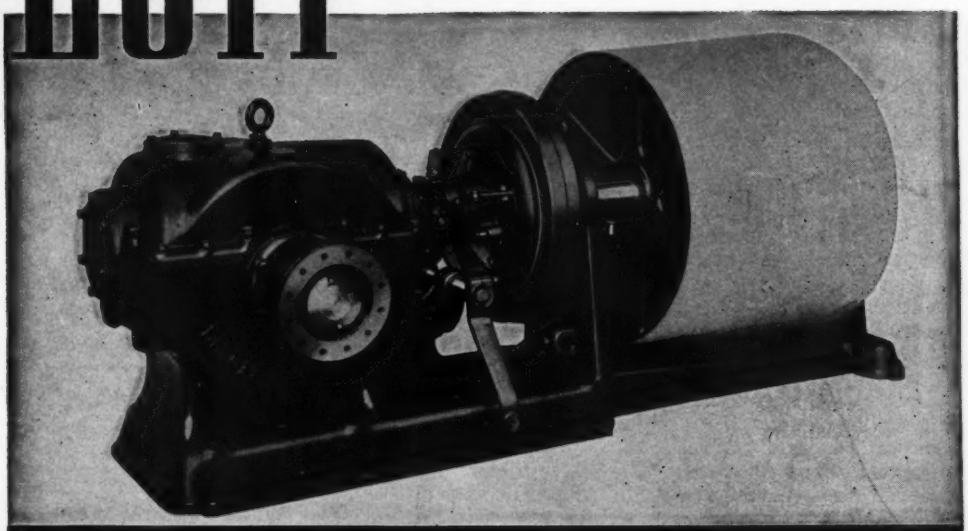
Testing Laboratories Changes

Appointment of W. C. Anderson as sales manager of Electrical Testing Laboratories, with particular responsibility for utility sales, is announced by Preston S. Millar, president. Mr. Anderson is taking over his new duties immediately. He comes from the Ohio Power Company, Canton, where he was division industrial and commercial manager.

Mr. Millar also announced that at a recent meeting of the Board of the Laboratories, Denis J. Lees was elected assistant treasurer. Mr. Lees has for the past ten years been comptroller and previously to that directed the work of the accounting department. He will continue in these capacities with enlarged responsibilities.

An enlarged sales organization has been established, according to Mr. Millar, embracing the field of utility sales, general test and certification sales.

BELOIT



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Pulp from Redwood Mill Waste

Oswald Wilson, president of the Agricultural Engineering Foundation, and technical adviser for the California Waste Utilization Committee, reports some very interesting developments in the utilization of mill and timber waste in the production of high grade pulp.

Mr. Wilson, who is stopping for a few days at the Hotel McAlpin in New York in speaking about these developments states that a mixture of decayed wood, hard wood, sap wood, bark and knots that otherwise would have gone to the fuel bin or slab fire were utilized. "We took it," he says, "after it had passed the hog instead of the chipper and yet without selection made a wonderful pulp out of it. We believe that no other process of today can touch this performance, namely utilize this type of waste in the manufacture of a high grade pulp, a process which we have developed and patented. The reason for this lies in the fact that the process will yield from prime wood well selected and chipped a pulp considerably better than any standard method, consequently it will permit of considerable dilution from poor material and yet be acceptable, for of course an inferior pulp must be produced from bark and unsound wood alike. Not only did we produce a very high grade pulp, but at a considerable saving in the cost, which shows that a very high grade pulp can be produced from $25 to $30 per ton."

Mr. Wilson is positive that for a cheap product redwood mill waste will be found superior to Southern pine in the manufacture of paper and all other products from pulp.

Mr. Wilson says that most favorable contracts can be made with the redwood lumber interests for the utilization of their waste and byproducts. One company alone he states is sufficiently interested to agree to furnish the raw materials delivered at the plant, furnish electric power, steam power, water and necessary buildings and either take a share of the profits or agree upon a flat price and this he believes for obvious reasons is particularly interesting at this particular time.

SKF Industries Expand

An illustration is presented herewith of the No. 2 plant that will materially increase the capacity of SKF Industries, Inc., Philadelphia, in the production of more than 6000 types and sizes of ball and roller bearings—one of the most modern plants in Philadelphia, located on the Pennsylvania Railroad at Bridge Street, and the third of SKF's Philadelphia factories.

The one-story, saw-tooth, daylight type building contains 226,000 square feet of floor space on a plot of 15 acres of beautifully-landscaped lawns, and will be devoted exclusively to the manufacture of antifriction bearings.

Executive, sales, and sales engineering offices will remain at Plant No. 1 at Front street and Erie Avenue, site of the old Hess-Bright Manufacturing Company which was founded in 1904. Here, wing after wing has been added until practically all of the available manufacturing space has been utilized.

The Atlas Ball Company, a subsidiary, will continue to manufacture balls at Glenwood and American Streets. All three plants are conveniently located to each other.

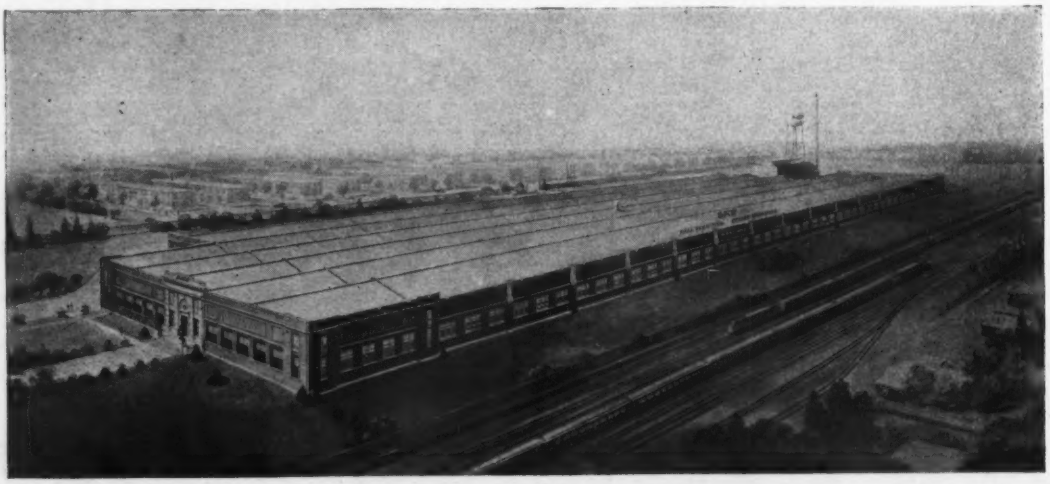
Simplified Practice for Containers

The recently proposed Simplified Practice Recommendation for Heavy-Duty, Round, Nesting Paper Food and Beverage Containers, and Lids, has been accorded the required degree of acceptance by the industry, and has been approved for promulgation as of June 15, 1940, Lyman J. Briggs, Director, National Bureau of Standards, Department of Commerce, announced last week.

This simplified list of recommended containers includes standard types, shapes, capacities, weight per 1000 containers (waxed and unwaxed), maximum depth of lid seat, and maximum bottom recess. Standard basic weight of paper for different types of lids is also given.

In the opinion of members of the Cup and Container Institute, Inc., the general adoption of the recommended standards should result in the elimination of containers that are too light in weight to give the consuming public adequate service, and those that are excessively heavy beyond needed requirements.

Pending printing of the recommendation, about September 15, mimeographed copies may be obtained upon request from the Division of Simplified Practices, National Bureau of Standards.



New Plant of SKF Industries

IS WORTH A THOUSAND GUESSES

THERE'S no need to guess what's happening inside a "PYREX" brand Industrial Glass Pipe Line. With this transparent piping, you know because you *see*. Color, rate of flow, turbidity—in fact all conditions of the pipe as well as its contents are clearly revealed.

That is another reason why, wherever corrosive solutions must be conveyed from one process to another, wherever purity must be strictly maintained, engineers are specifying "PYREX" Piping.

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Gair Employees Hold Golf Tournament

On Saturday, June 15, the employees of Robert Gair Company, Inc., held their third semi-annual Golf Tournament at the Rockland Country Club at Sparkill, N. Y. Approximately 54 attended, including a large representation from the New York office and many from the plants and other offices of the company.

Winner of the tournament, with an 82, was James J. Galgano of the Piermont plant, with Bob Ross of the Brooklyn plant, second, with an 84 and Fred England of the New York office third, with an 88. Prizes were donated by the officers and staff of the company and were presented by Mr. Elmer Curtis.

In addition to having the best golfer at the tournament, the Piermont plant also claimed the honor of having, in William Cavanaugh, the worst golfer. Mr. Cavanaugh won the prize presented for the highest score with a 149.

Other prize winners were the following: W. R. Tietgen, Lockwood Barr, Howard B. Smith, Henry Woerner, Edward Sweeney, George W. Shannon, S. Evans, Jr., and Peter Hauser of the New York office; Clifford Moth and Anthony Komornick of the Piermont plant; H. Cooper of the Brooklyn plant and Charles Fast of the Bogota plant.

Others who attended were Norman F. Greenway, first vice-president, Emil O. Sommer, comptroller, Wray Callaghan, folding carton sales manager, Herman Whitmore, general manager of the boxboards divisions, Joseph A. Benedetto, president of D. Benedetto, Inc., Alexander Israel, manager of the Brooklyn plant, Harry Van Decker, manager of the Piermont plant and Floyd C. Costello, manager of the Bogota plant; also Walter E. Ringle, A. J. Bauser, George Rogers, George Griesel, J. W. Duerr, Henry Breunich, L. B. Moss, H. C. Millar, Dwight Thurston, and William Trimble of the New York office; M. Grull, Edmund Moore, John Pabst, J. B. Simpson, Joseph Hanousek, Fred Courson, Frank McCormick and Henry Rust of the Piermont plant and L. H. Kyle of the Bogota plant.

Norwegian Freighter Loads Paper

MONROE, Mich., July 1, 1940—Two-hundred six tons of paper board moved out of the port of Monroe recently in the hold of the freighter Raynefjell, unusual excitement surrounding its departure for two reasons:

It was the first outgoing cargo from the new harbor terminal.

It was bound for the European war zone, the British Isles.

Hundreds of spectators came and went on the wharfside during the 13 hours the Ravnefjell was in, speculating on the dangers the ship might encounter crossing the Atlantic. At the same time, eagle-eyed customs and ship officials scrutinized every move of the loading process, making sure no danger came to the cargo on this side of the Atlantic.

The boat came in at 8 A.M. Sunday, turned around, and tied up alongside the terminal warehouse, its nose pointing toward the steel plant across the river. Its cargo, 413,000 pounds of 30-point jute board manufactured by the River Raisin Paper Company, was stacked in hundred-pound bundles inside the warehouse.

The wharf was dotted with groups of spectators all day, and 30 to 50 cars were parked around the warehouse from mid-morning until evening. Ropes had to be strung to keep working spaces clear.

Where is the ship going and what will her cargo be used for? were the two most frequent questions heard.

No one gave definite answers. The customs and ship officials refused to talk on the subject. The Norwegian crew either could not, or would not speak English.

Canada's Exports Higher

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Can., June 24, 1940—A combined increase of over $6,000,000 in the value of pulp and newsprint exports from Canada, as compared with the similar month of last year, is recorded in figures just issued by the Government for the month of May, the increase in the exports of pulp amounting to $2,703,053 and in the exports of newsprint to $3,383,413. The exports of newsprint for the month amounted to 6,024,181 cwt., valued at $14,061,394, as compared with 4,887,992 cwt., valued at $10,677,981 in May, 1939. Of the amount exported last month 4,552,818 cwt., valued at $10,617,988, went to the United States and the remainder mainly to British countries overseas and to South America.

The exports of wood pulp were as follows: kraft sulphate, 230,929 cwt., valued at $747,141, as compared with 160,210 cwt., valued at $427,184 in May, 1939; bleached sulphite, 764,488 cwt., valued at $2,545,522, as compared with 497,414 cwt., valued at $1,393,094; unbleached sulphite, 525,912 cwt., valued at $1,264,464, as compared with 171,368 cwt., valued at $292,939; mechanical pulp, 333,430 cwt., valued at $517,473, as compared with 243,097 cwt., valued at $300,649; other pulp, 27,905 cwt., valued at $78,657, as compared with 15,368 cwt., valued at $34,673; and screenings, 10,757 cwt., valued at $9,010, as compared with 19,063 cwt., valued at $10,675. Of the total amount of $5,162,267 the value of pulp exported, that taken by the United States was valued at $4,046,626.

New Knight, Allen & Clark Lines

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., July 1, 1940—Knight, Allen & Clark, Inc., are sending out announcements that they have taken the agency for Hamilton bond and ledger, made by W. C. Hamilton & Sons, Inc., Miquon, Penn.

They are also issuing a new folder on the American Writing Paper Company, Holyoke, Mass., concerning Trojan Bond, to be followed by personal distribution of a giant sample book.

They are distributing a new portfolio on Wheelwright Made (W)right Index Bristol.

Goes With Greene, Tweed & Co.

Walter Josephson, Jr., who is the son of the late Walter S. Josephson, discoverer of dry-ice and the founder of that industry, and who formerly was chief engineer and works manager of International Carbo-Ice, Ltd., and subsidiaries, Toronto, Canada and London, England, has become associated, in the capacity of sales engineer, with Greene, Tweed & Co., 101 Park Avenue, New York City, manufacturers of "Palmetto" and other self-lubricating packings.

BLEACHER UMPIRES ARE OFTEN WRONG!

Near or far, anyone can guess. But the man who gives answers you can rely on is the dust-covered gent who stands right over the action.

The right answers are just as difficult in industry, as more exact manufacturing requirements add to friction's potential cost. And in the serious business of keeping down these costs, Shell men are succeeding daily by using the umpire's reliable system. They are constantly out on the job, working in your plants, getting their facts first hand.

That's why changes in design, speeds, pressures and other operating requirements of your machines don't take Shell men by surprise. They have seen those changes coming, months, sometimes years, before they arrived. And backed by the skill and resources of Shell research, they bring to new machines and old machines alike . . . in a wide variety of industries . . . lubricants that keep down costs from the day they go into service.

It's this "action-on-the-spot" method of getting the facts that pays off—and you are the one it pays. Have you had your Shell man's recommendation for your machines?

SHELL

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CONSTRUCTION NEWS

Meridian, Miss.—The Flintkote Company, 50 West 50th street, New York, N. Y., manufacturer of roll roofing products, insulating board specialties, etc., has concluded arrangements with the Peoples Water and Gas Company, Meridian, for installation of a steel pipe line to new plant of company near the local airport, now in course of erection, for natural gas transmission for service at power house at mill. Work is scheduled to be placed under way at once. Construction of plant, previously referred to in these columns, is proceeding rapidly and is expected to be ready for operation early in 1941. It will consist of a main one-story unit, 300 x 1200 feet, with a group of smaller structures, and will be used for the manufacture of insulating and wall board products from wood fiber. It is estimated to cost close to 2,000,000, including machinery. The Rust Engineering Company, Clark Building, Pittsburgh, Pa., and Martin Building, Birmingham, Ala., is carrying out the erection.

Chicago, Ill.—The Burgess Envelope Company, 622-30 West Adams street, manufacturer of commercial envelopes and kindred paper products, has leased the entire second and third floors of building at location noted, for a period of two years, and will use the increased space for expansion in production department.

Johnsonburg, Pa.—The Castenea Paper Company, manufacturer of book and other paper stocks, will carry out expansion and improvements at mill by a number of separate contracts for different features of work, and which are now being awarded. As recently noted in these columns, work will include modernization in production departments, with facilities for increased manufacture. The project will be pushed to early completion and is estimated to cost in excess of $50,000, including equipment. T. K. Hendryx, 165 Interstate parkway, Bradford, Pa., is architect and engineer, and will supervise work.

Gatineau, Que.—The Masonite Company of Canada, Ltd., manufacturer of fiber board products, has approved plans for new addition to local mill, consisting of a two-story and basement structure, 60 x 140 feet, reported to cost over $75,000, with equipment. It will be used for expansion in production. Erection contract has been let to E. Brunet & Sons, Ltd., 35 Aylmer road, Hull, Que., and work will be placed under way at once.

Thorold, Ont.—The Beaver Wood Fibre Company, Ltd., manufacturer of newsprint, etc., has completed plans for new addition to mill, to consist of a one-story structure, 155 x 180 feet, reported to cost in excess of $100,000, with equipment. Bids are being asked on general contract and erection is scheduled to be carried out during the summer.

Newton, N. J.—The Campbell Company, Hicks avenue, special paper products, has closed bids on general contract for new mill on local site for the production of processed photographic paper stocks, including sensitising and other departments. It will be one and two-story, and basement, 60 x 250 feet, reported to cost approximately $80,000, with equipment. Erection contract is scheduled to be awarded soon.

St. Louis, Mo.—The Central Paper Box Company, 2110-12 Walnut street, manufacturer of paper boxes and containers, occupying second floor of building at location noted, sustained a fire loss recently when structure was damaged by fire. The space was used in part for storage and distribution. An official estimate of loss has not been announced. The damage will be replaced.

Glenville, Conn.—The American Felt Company has approved plans for new addition to mill, consisting of a one and two-story and basement building, 75 x 145 feet, reported to cost close to $50,000, with equipment. Contract for erection has been awarded to the Mertz Construction Company, 145 Horton avenue, Port Chester, N. Y., and work will be placed under way at once. Henry H. Fales, 10 Weybosset street, Providence, R. I., is engineer.

Winnipeg, Man.—Building Products, Ltd., 3 Midland street, manufacturer of building and roofing papers, and kindred products, has awarded general contract to the Beaver Construction Company, Ltd., McIntyre Building, for new addition to mill, consisting of a one-story structure, 200 x 200 feet, reported to cost close to $100,000, including equipment. Erection is scheduled to be placed under way at once.

Asbestos, Que.—The Canadian Johns-Manville Company, Ltd., Sun Life Building, Montreal, Que., manufacturer of asbestos mill board, insulating paper and kindred products, has plans under way for two new additions to mill at Asbestos, comprising two-story structures, 130 x 320 feet, and 75 x 95 feet, respectively, to be used for expansion in main production plant, and for storage and distribution, in order noted. It is understood that bids will be asked on general erection contract at early date.

Beachport, South Australia—Cellulose (Australia), Ltd., recently organized to manufacture paper and paper board products, building board specialties and other cellulose board products, has work under way on large mill near Beachport, where tract of about 80 acres of land has been taken over. Plant will comprise several large one-story structures, with main production unit about 150 x 750 feet, with storage and distributing buildings, power house, pumping station and miscellaneous structures. Entire project is estimated to cost about $1,000,000, with completion scheduled next December. The company has perfected arrangements with the Government of South Australia for acquisition of soft wood timber properties, to provide an initial allotment of about 50,000 tons for mill supply.

Wisconsin Rapids, Wis.—The Consolidated Water Power and Paper Company, Wisconsin Rapids, manufacturer of bond and other writing paper, has plans under way for new boiler house at local mill, to be four-story high, 40 x 40 feet. Installation will include new boiler unit and auxiliary equipment. It is expected to carry out work by day labor. Erection is scheduled to begin soon. Company has construction under way on new addition to mill at Stevens

Point, Wis., used for the production of crepe and other light-weight paper products, consisting of a three-story structure, 37 x 112 feet, to be used primarily for storage and distribution. Work is being carried out by day labor. Contract has been awarded to the Wisconsin Bridge & Iron Company, Milwaukee, Wis., for structural steel framing. Cost reported over $60,000, with equipment.

Fernandina, Fla.—The Container Corporation of America, Inc., 111 West Washington street, Chicago, Ill., manufacturer of corrugated paper boxes and containers, etc., has approved plans for new addition to sulphite pulp mill at Fernandina, to be one-story, reported to cost close to $65,000, with equipment. Contract for erection has been awarded to the George D. Auchter Company, East Adams street, Jacksonville, Fla., and erection is scheduled to be placed under way at once.

Fulton, N. Y.—Fire recently damaged a portion of mill of the Oswego Falls Corporation, Fulton, manufacturer of paper board products. An official estimate of loss has not been announced, but is reported as slight, approximating $5000. The damage will be replaced.

Kalamazoo, Mich.—The Standard Carton Division of Sutherland Paper Company, manufacturer of paper cartons and containers, has superstructure under way on new one-story addition to mill, recently referred to in these columns, and will push work to early completion for occupancy for increased operations. Erection is being carried out by the Miller-Davis Company, Kalamazoo, general contractor. Cost is reported in excess of $45,000, including equipment.

Crookston, Minn.—The Minnesota Fiber Manufacturing Corporation, recently organized, is said to be planning early operation of a local mill for the manufacture of fiber products. New company is headed by A. W. Hoglund, H. B. Fink and G. O. Hage, Crookston.

Appleton, Wis.—The Riverside Paper Corporation, manufacturer of bond and other paper stocks, is awarding a number of sub-contracts in connection with new extension to mill, previously noted in these columns, including roofing to Chase Company, Oshkosh, Wis.; elevator improvements, to Otis Elevator Company, Milwaukee, Wis., and for minor work. Expansion consists of a top story extension to present three-story mill, 78 x 86 feet, to be used for expansion in finishing division. Work has been started and will be completed during the summer. C. R. Meyer & Sons Company, 50 State street, Oshkosh, has the general erection contract.

Merritton, Ont.—The Alliance Paper Mills, Ltd., manufacturer of writing and kindred paper stocks, box board, insulating board, etc., is considering plans for new addition to mill, to be one-story, reported to cost close to $60,000, with equipment. It is understood that erection will be carried out during the summer.

Port Arthur, Ont.—Provincial Paper, Ltd., 388-96 University avenue, Toronto, Ont., manufacturer of manila and other paper stocks, has awarded general contract to the Clayton Company, Ltd., Graham Block, Fort William, Ont., for new addition to mill at Port Arthur, recently referred to in these columns. It will be one-story, about 35 x 140 feet, reported to cost close to $75,000, instead of larger sum, previously noted. Work on superstructure will be placed in progress at once.

New Companies

Brooklyn, N. Y.—The East Coast Paper Products Corporation has been incorporated with capital of $60,000, to deal in paper products of various kinds. New company is represented by Duberstein & Schwartz, 66 Court street, Brooklyn, attorneys.

New York, N. Y.—The Paper Cup Corporation, New York, has been organized with capital of 100 shares of stock, no par value, to manufacture and deal in paper drinking cups and kindred paper goods. New company is represented by Myron Goldman, 2 Lafayette street, New York, attorney.

Wilmington, Del.—The San-Aps Corporation, Wilmington, care of Corporation Fiscal Company, Delaware Trust Building, Wilmington, representative, has been chartered under state laws, with capital of $100,000, to manufacture and deal in paper products of various kinds. The incorporators include H. W. Kennedy, Jr., and B. M. Brown, both of Wilmington.

New York, N. Y.—The Reno Paper Stock Company, Inc., New York, has been organized with capital of 100 shares of stock, no par value, to deal in paper goods of various kinds. New company is represented by Sol Horenstein, 11 West Forty-second street, New York, attorney.

Detroit, Mich.—The Service Paper Company, Inc., 12330 Dexter boulevard, has been organized with capital of $40,000, to deal in commercial paper products, wrapping papers, etc. New company is headed by Samuel Liptzen, 2938 Richton avenue, Detroit.

New York, N. Y.—Allied Labels, Inc., has been incorporated with capital of 200 shares of stock, no par value, to manufacture and deal in paper labels and kindred paper goods, gummed stocks, etc. New company is represented by Oliphant & Lerman, 11 Park place, New York, attorneys.

Springfield, Mass.—The Monarch Waste Paper Corporation, 18 Belle street, has been chartered with capital of 100 shares of stock, no par value, to deal in waste paper. Charles Suher is president and treasurer.

New York, N. Y.—The Hy-Gold Paper Company, Inc., has been incorporated with capital of 200 shares of stock, no par value, to deal in paper products of various kinds. New company is represented by Morris K. Siegel, 521 Fifth avenue, New York, attorney.

Paper Industry in Japan

Under the title of "The Paper Industry and Printing in Japan," the Japan Reference Library, 500 Fifth avenue, New York, has just published a booklet by P. D. Perkins. The price is 25 cents. The foreword of the attractively printed booklet states that it is intended as a contribution to the Gutenberg celebration which is being observed throughout the world in 1940, it also appears as the first in a series to be known as the Japan Reference Library Publications, dealing with Japanese arts, etc. The second publication will be an introduction to the Japanese haiku by Harold Gould Henderson, and the third, a history of Japanese postage stamps.

FINANCIAL NEWS

New York Stock Exchange

High, Low and Last for Week Ending July 3, 1940

	High	Low	Last
Armstrong Cork Co.	30½	28½	29
Celotex Corp.	6⅞	6	6⅞
Celotex Corp., pf.	50	50	50
Certain-Teed Products Corp.	4⅝	4	4½
Certain-Teed Products Corp., pf.	21½	18¾	21¼
Champion Paper & Fibre Co.	20¾	20¾	20¾
Champion Paper & Fibre Co., pf.	100	100	100
Congoleum-Nairn Co.	15⅜	15	15
Container Corp. of America	13	12	12¾
Continental-Diamond Fibre Co.	6⅛	6⅛	6⅛
Crown-Zellerbach Co.	14½	13⅜	14
Crown-Zellerbach Co., pf.	81	80	81
Flintkote Co.	13¾	12¼	13½
Robert Gair	3	2¾	2⅞
Robert Gair, pf.	12¾	12¾	12¾
International Paper & Power	14	12¼	12¼
International Paper & Power, pf.	50⅜	47	47¼
Johns-Manville Corp.	57	54	57
Kimberly Clark Corp.	35⅛	33½	35⅛
MacAndrews & Forbes	27	27	27
Masonite Corp.	25	23	24½
Mead Corp.	9⅝	9¼	9¼
Paraffine Companies, Inc.	29⅞	29⅞	29⅞
Rayonier, Inc.	16½	15⅛	15⅛
Rayonier, Inc., pf.	28½	28	28½
Ruberoid Co.	14¾	13¾	14¾
Scott Paper Co.	39	38	39
Scott Paper Co., pf.	103	103	103
Sutherland Paper Co.	22⅝	22⅛	22⅝
Union Bag & Paper Corp.	11⅜	10¼	10¾
U. S. Gypsum Co.	56½	52¾	56½
U. S. Gypsum Co., pf.	175	175	175

New York Curb Exchange

High, Low and Last for Week Ending July 3, 1940

	High	Low	Last
National Container Corp.	10⅝	9½	10⅝
St. Regis Paper Co.	3¼	2⅝	2⅝
St. Regis Paper Co., pf.	60	57½	60
Taggart Corp.	3	3	3

Champion Earnings Up

Improved conditions which have prevailed in the paper industry since last September will be reflected in the earnings of Champion Paper and Fibre Company for the year ended April 30, last. Profit for that period will exceed the earnings of either of the two preceding fiscal years and should be roughly equal to the $1,753,408 earned in the year ended April 25, 1937. Earnings are likely to be about $2.15 a share on the common stock, after allowing for preferred dividends paid during the year on the 6% preferred stock.

For the 40 weeks ended February 4, 1940, Champion earned $1,212,654, which was equal to $1.52 a share on the 551,000 shares of common stock. Of this total, $486,849 or 67 cents a share was earned in the 12 weeks ended February 4.

The last 12 weeks of the year are likely to show earnings no smaller than those reported for the preceding period.

Since the close of the fiscal year, Champion's business has continued at a high level. A wholly integrated company, Champion uses most of the pulp it produces, but has had some surplus which it has sold on the strong market prevailing for that product. In the face of the big demand for paper and pulp, however, the advances in prices on white paper of the type produced by Champion have been small in comparison with many other grades.

In the year ended April 30, 1939, Champion earned $446,648, or $5.76 a share on the preferred stock then outstanding. This compared with $1,557,439 or $1.98 a share on the common stock in the year ended April 24, 1938.

Masonite Earns $333,566

The Masonite Corporation reports net profits for the third quarter of $333,566.22 after depreciation, income taxes and other deductions had been made, subject to final audit, according to R. G. Wallace, vice-president. This is equal to 58 cents a share on the 539,210 shares of outstanding common stock after providing for preferred dividends. The third quarter consists of the 12-week period from March 17 to June 8. This represents an increase of 29 per cent over net profits of $258,380.31 or 44 cents per share on the same number of common shares outstanding for the corresponding period of time last year.

For the 40-week period of Sept. 1, 1939 to June 8, net profits totalled $1,029,497.34, or $1.78 a common share. This represents an increase of 47 per cent over net profits of $701,303.31 or $1.17 per share on 539,210 common shares for the corresponding period of time last year.

Sales for the 12-week period totalled $2,305,633.39 as compared with $1,916,982.78 for the corresponding period last year, representing an increase of 20 per cent. Sales for the 40-week period totalled $6,850,-225.27 as compared with $5,159,293.70 for the corresponding 40-week period last year representing an increase of 33 per cent.

Tomahawk Co. Re-Elects

[FROM OUR REGULAR CORRESPONDENT]

TOMAHAWK, Wis., July 1, 1940—Stockholders of the Tomahawk Kraft Paper Company held their annual meeting at the Wausau Club, Wausau, Wis., June 26 and re-elected all officers and directors.

The report of A. L. Kreutzer, president, declared the financial position of the corporation was at its most satisfactory point in many years. The ratio of current assets to liabilities was shown to be $668,-429.76 to $63,496.

Operations for the past several months have been very successful, Mr. Kreutzer said, and the immediate outlook is bright except for the uncertainty of war developments.

President Kreutzer was reelected, as were the other officers: S. B. Bugge, vice-president and general manager; D. C. Everest, Wausau, secretary and treasurer, and J. H. Cowhill, Chicago, sales manager. Other members of the board are C. C. Yawkey and F. K. McPherson, Wausau; Ben Alexander, Chicago, and Henry Thompson, Wilwaukee, Wis.

Value of M. & O. Paper Co. Cut

An advisory report on reorganization of the Minnesota and Ontario Paper Company, filed by the Securities and Exchange Commission, puts the valuation of the concern at $25,500,000, compared with

present book value of about $74,000,000, it was revealed here today.

The report, filed with the United States District Court for study before the reorganization hearings are resumed on July 15, approves, in general, a reorganization plan proposed by trustees of the company on Dec. 4 last, under the Federal Bankruptcy Act. The plan calls for issuance of $12,200,000 in principal amount of income-mortgage bonds, all of which would be distributed to the present bondholders of the company; provides for payment of minor amounts in cash to equalize interest accruals on certain classes of securities, and for issuance of common stock of the reorganized company on the basis of 72.59 per cent to bondholders of the company and 27.41 per cent to its unsecured creditors.

The SEC's report suggested that interest on the new income bonds be 5 per cent instead of the 4 per cent provided under the trustees' plan.

Brown Co. Earns $528,355

The Brown Company, had a net profit of $528,355 for the twenty-four-week period ended May 18 after provision for Canadian income taxes, foreign exchange adjustments and depreciation, Serge Semenenke, chairman of the reorganization managers for the company, announced today. This compares with a loss of $965,703 in the same period last year.

Consolidated sales for the company totaled $10,574,012 as compared with $7,519,299 in the earlier period. On sales of $2,024,689 for the month ended May 18, the company earned $148,200 after depreciation, taxes and charges but before bond interest. This was considerably better than the average for the twenty-four-week period, Mr. Semenenke said.

American Box Nets $82,576

The American Box Board Company for the 24 weeks to May 17 reports a net profit of $82,576, equal, after preferred dividend requirements, to 37 cents each on 124,363 shares of common stock, against $47,207, or 8 cents a common share, for the twenty-four weeks to May 12, 1939.

Abitibi Earns $817,457

The Abitibi Power and Paper Company reports May earnings were $817,457, prior to audit and charges for depreciation and bond interest, compared with $525,116 in April and $237,830 in May, 1939. Earnings for May, 1940, include $101,338 received as premium on United States exchange.

Imperial Declares Dividend

Directors of the Imperial Paper and Color Corporation have declared a dividend of $1.50 a share, payable on June 24 to stockholders of record on June 18. The last disbursement, declared on March 12, was 75 cents.

Union Bag Votes Dividend

Directors of Union Bag and Paper Corporation have declared a dividend of 15 cents per share on the capital stock, payable July 12, 1940 to stockholders of record at the close of business July 8, 1940.

As Rugged as a Cord Auto Tire

FLEXICORD
WASH-UP HOSE

Remember that name the next time you buy hose for wash-up service in your paper mill. It is the hardest hitting, hardest working hose that you can put on the job. You may have bought hose for that requirement before, but you've never bought a hose like FLEXICORD . . . it is built like a cord automobile tire. It's heavy cords and extremely tough rubber enable it to do the job in a manner that will thrill the most exacting workman.

FLEXICORD is "tops" and will prove most economical considering the service it gives and its long life. Get all the facts today.

THE CINCINNATI RUBBER MFG. CO.
CINCINNATI, OHIO

CINCINNATI
TRANSMISSION · CONVEYOR BELTS
HOSE · RUBBER COVERED ROLLS

Hilbert Heads Starch Studies

Dr. G. E. Hilbert has been selected to head the Starch and Dextrose Division of the Northern Regional Research Laboratory at Peoria, Ill., Dr. Henry G. Knight, chief of the Bureau of Agricultural Chemistry and Engineering, has announced. In his new position Dr. Hilbert will direct fundamental studies of starches, dextrins and dextrose as a basis for the possible development of new and expanded industrial uses for these agricultural products.

A native of Connecticut, Dr. Hilbert received the degree of Chemical Engineer from Rensselaer Polytechnic Institute, the Master of Science degree from Lafayette College, and the Ph. D. degree in chemistry from Yale University where he carried on research work in organic chemistry and biochemistry. He entered the service of the Department of Agriculture in the Bureau of Chemistry and Soils in 1930. In 1937 he was placed in charge of the organic section of the Fertilizer Research Division where he directed the studies of fixation of nitrogen through organic compounds.

Since August, 1938, Dr. Hilbert has been connected with the Regional Laboratories as scientific advisor. The Northern Laboratory will be finished late this summer and the work of equipping it will go forward at once. The three other regional research laboratories, at New Orleans, and near Philadelphia and San Francisco, Dr. Knight reports, will also be finished by the latter part of this year.

Newsprint Rates to South America Cut

WASHINGTON, D. C., July 1, 1940—At his press conference on Tuesday, President Roosevelt used the newsprint situation in South America as an example of the new economic situation and the desire of this country to help South America.

He explained to the newspaper correspondents that since the difficulty in Scandinavian countries, South American countries have been short of newsprint paper and have been dependent on the United States. He said that one of the difficulties was the high cost of transporting newsprint from the United States to South America.

The President announced that through the cooperation of the State Department the freight rate on newsprint from New York to Buenos Aires has been reduced from $15 to $9.75 per ton. He announced also that proportional reductions in freight rates on newsprint have been made to other east coast South American points. In answer to a question he said that he believed that the American shipping companies had stood the loss.

Buy Paper Under Walsh-Healey Act

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 3, 1940—During the week ended June 15, the Government purchased $95,771.88 worth of paper and allied products under the Walsh-Healey Act as follows: paper towels for Procurement Division from Resolute Paper Products Corporation, New York; $26,546.88; toilet paper for Procurement Division from M. S. Ginn & Co., Washington, D. C., $16,425.00; and filter material for War Department from Brown Company, Portland, Me., $52,800.00.

Timken Introduces New Bearing Series

The Timkrn Roller Bearing Company has put into production a new bearing series of the standard "SS" type. The first bearing in this series is 9285-9220, with a cone bore of 3 inches, O. D. of 6⅜ inches and width of 1-15/16 inches. At 500 r.p.m. this bearing has a radial capacity of 6255#, and a thrust capacity of 8710 lbs. The 9100, 9300 and 90000 series bearings of the "SS" type have also been redesigned to reduce the outside diameters and widths of each series while still maintaining the same load carrying capacities. Two cone bores of 2-7/16 inches and 2-11/16 inches are available in the 9100 series. Two different bores of 3 inches and 3-5/16 inches are available in the 9300 series and one cone bore of 3-13/16 inches in the 90000 series.

These series in addition to those now available in the "SS" type provide a wide range of capacities, varying in cone bores from ¾ inch to 12½ inches. The "SS" series are single row bearings with steep cup and cone angles. They are designed primarily to handle those loading conditions where thrust loads are large compared to the radial loads. Their design embodies the primary Timken principles of "On Apex" construction, which assures true rolling motion, and positively aligned rolls, which prevent roll skewing. The multiple perforated Timken cage retains the rolls equally spaced around the bearing periphery.

Dr. Donald Price Made Chairman

Dr. Donald Price, technical director, Organic Research Laboratories, for the National Oil Products Company, of Harrison, N. J., was elected chairman for 1940-41 of the Metropolitan Microchemical Society at the ninth regular meeting of the group at Fordham University, on May 23.

Dr. Price succeeds Dr. Alexander Knoll, of Columbia University as chairman of the society, which includes most of the metropolitan area's prominent specialists in microchemistry.

Other officers elected included Harold V. Wadlow, of the Bell Telephone Laboratories, as vice-chairman, and Dr. Julius A. Kuck, of the College of the City of New York, as Secretary-treasurer.

Prof. A. Benedetti-Pichler, of New York University, and Dr. Knoll, were elected members of the Executive Committee.

Dr. Price is councilor of the American Chemical Society. He is a graduate of Columbia University, Class of 1924.

Canada's Board Production Increases

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 26, 1940—Domestic shipments of rigid insulating board in Canada during the 3 months ended March 31 reached a total of 13,128,665 surface feet, compared with 9,553,011 surface feet for the corresponding period in 1939. Principal increases occurred in shipments of panel board which rose from 7,198,009 surface feet in 1939 to 9,635,786 surface feet during the first 3 months of the current year.

Shipments of plaster base board and rough boards also were substantially higher than a year ago, according to figures released by the Dominion Bureau of Statistics, Ottawa.

Import Decisions

The Import Committee of the American Paper Industry announces that two importations at New York of coated wrapping papers have been classified by Customs officials for duty as coated paper at 5 cents per pound and 15 per cent, though claimed by the importer to be dutiable as greaseproof paper at 3 cents per pound and 15 per cent.

One importation of diagram paper imported at New York was classified as a manufacture of paper at 35 per cent, though claimed by the importer to be dutiable at the rate, lower in this case, for printed writing paper of 3 cents per pound and 25 per cent.

One shipment of transfer paper was classified for duty as coated paper at 5 cents per pound and 15 per cent, though claimed by New York importer to be duty free as duplex decalcomania paper.

Four importations at New York of Japanese tissue, copying paper, filter discs, and bibulous paper in sheets and rolls were classified for duty at 6 cents per pound and 20 per cent, claimed by the importers to be dutiable at lower rate as filter paper.

One Shipment of Japanese "cushion paper", imported at Chicago, was classified for duty at 6 cents per pound and 20 per cent, though claimed to be dutiable at 4 cents per pound and 15 per cent under the British reciprocal trade agreement provision for lower duty rates on stereotyping, carbonizing, and copying paper.

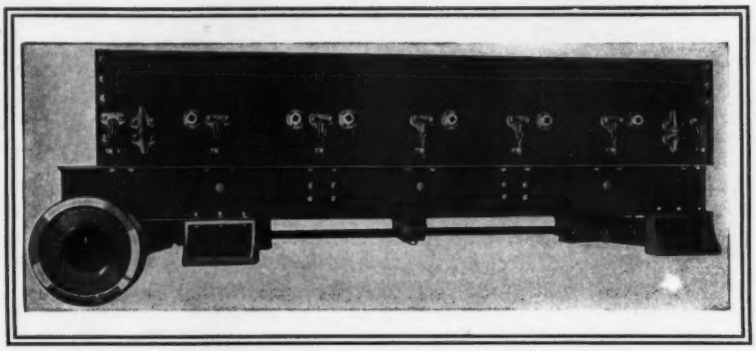
Kieffer Mills Build

The Kieffer Paper Mills started construction, last week, of a new brick, steel, and concrete warehouse 36 x 120 feet and at the same time started reconstruction of the finishing room size 50 x 140 feet by rebuilding it of brick, steel and concrete to conform to the new addition.

This finishing room will be modern in every respect, well lighted and without a post within the entire building. This will enable the company to take better care of its increased business which has developed on its various finished Shoksorb products such as brick trays, car door pads, basket circle pads, egg case flats, and furniture pads.

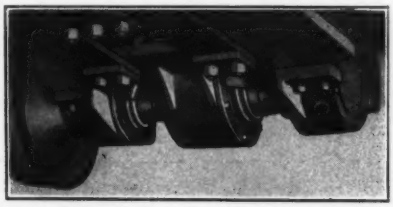
The demand for these articles is such that the increased warehouse and finishing room space was essential to taking care of its customers requirements in a satisfactory manner.

APPLETON · WAGNER DIAPHRAGM SCREENS



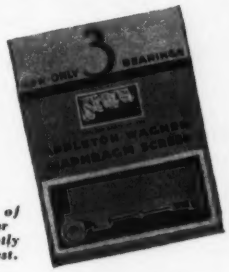
Finer Screen Performance and Greater Operating Efficiency

There is no change in the screening principle with the Appleton-Wagner Diaphragm Screen. It retains the screen plate vat and the clean screening of pulp that only diaphragm screens can give. But new mechanical achievements provide the easiest, smoothest operation and greatest flexibility ever attained on any flat screen. Only 3 bearings for the drive, rocker-action, little lubrication, less driving power and maximum capacity are some of the advantages of Appleton-Wagner Screens.



Only 3 bearings for the drive

Smooth, quiet rocker-action



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THE APPLETON MACHINE COMPANY
Appleton, Wisconsin

The company has also purchased additional land in front of its mill which can be used for further expansion but which for the present will be used as a parking space for the employees cars.

The plans is operating at full capacity and at the present time 75 per cent of the mills production is Shoksorb cushioning papers, both lined and unlined and various Shoksorb products

Murphy and Redlin Elected

Frank A. Murphy and Art W. Redlin were recently elected to the board of directors of the Beach & Arthur Paper Company. Frank A. Murphy was also elected vice-president in charge of paper sales, succeeding William H. Arthur.

PAPER
TRADE JOURNAL
Title Reg. U. S. Pat. Off.

Henry J. Berger
EDITOR

Vol. 111 July 4, 1940 No. 1

COMING EVENTS IN PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Fall Meeting, Olympic Hotel, Seattle, Wash., August 20-23.

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—Second Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

NATIONAL SAFETY COUNCIL, PAPER AND PULP SECTION, Annual Meeting, Stevens Hotel, Chicago, Ill. October 7-11.

TAXES IN THE PAPER INDUSTRY

In even a casual examination of the financial situation of the leading nations of the world today, it is at once apparent how greatly the heavy cost of armament has affected the normal commercial life in major countries. As the expansion of all goods most essential for military uses has progressed the usual effects have appeared. Expenditures of governments have increased far above current revenues, government controls have been established over all important phases of economic activity and great changes have occurred in the long established business connections in international trade.

In briefly reviewing the financial and economic situation at this date, *The Guaranty Survey,* issued June 24 by the Guaranty Trust Company of New York, states that "Of all the financial dislocations due to conflict, the most characteristic and the most serious are those resulting directly from its enormous cost to governments." In commenting on the national defense program the review continues, "It is clear that, if provision for defense is carried through on the scale now contemplated, it will affect economic conditions in the United States for years to come. The billions of dollars already appropriated or proposed represent only a beginning toward meeting the total cost of the military and naval establishment now considered adequate to provide genuine security for the United States and its vital interests in a world dominated by potentially hostile forces. Even with the greatest possible haste, the time required for completion will run into years."

"The immediate consequences of such a program will undoubtedly be stimulating to business, as were the immediate effects of the armament effort that accompanied our participation in the world conflict. These, however, are only the superficial and temporary results of enormous military expenditures. The ultimate economic consequences of such vast unproductive outlays cannot be other than burdensome. The people will be called upon to pay taxes on a scale never before approached in this country; and, even with such taxes, the national debt will undoubtedly rise to much greater heights. The coordination of the armament effort may necessitate a new extension of governmental restrictions and controls. In short, what the United States is contemplating is a great national sacrifice that only stern necessity can justify."

To what extent taxes have already placed a heavy burden on industry is shown in a publication prepared and issued by the American Paper and Pulp Association this month under the title of "Taxes and the Paper Industry". In this summary of the work carried on during the past year by the statistical and cost engineering committee through its subcommittee on taxation, the American Paper and Pulp Association states that, "One dollar and seventeen cents is paid by the paper industry for every dollar of dividends. The paper and pulp industry's tax payments to Federal, State and local governments averaged $46,300,000 a year in 1938 and 1939, while dividends averaged $39,600,000 on a capital investment of approximately two and a half billion dollars. Moreover, dividends in 1939 were only 93 per cent of those the year before although taxes were 17 per cent larger."

In pointing out that 97 cents is paid in taxes for every dollar of net profits, the publication states that "The industry's earnings, after all tax interest payments but before dividends, averaged $47,800,000 during the last two years, although taxes were nearly as large, averaging $46,300,000. Net profits increased from $40,000,000 in 1938 to $55,500,000 in 1939, but taxes likewise expanded from $42,700,000 to $49,900,000 during that period. For every weekly pay envelope $5.43 is paid in taxes. This payment to government equals 22 per cent of the industry's average weekly wage of $24.40 for hourly paid employees during 1938 and 1939. Wages advanced approximately 3 per cent in 1939 over the preceding year while taxes increased nearly 17 per cent during that time. For every ton of paper made $3.21 is paid in taxes. This amount is paid to tax collectors for every ton of finished paper produced, which on the basis of United States Census figures, averaged $82.58 per ton, f.o.b. mill during the past two years. As the industry's tax burden increased during that period, finished paper prices registered an average decline of $3.21 per ton."

The yearly tax bill of the paper and pulp industry from company figures reported to the American Pa-

per and Pulp Association and expanded on the basis of Bureau of the Census data indicate that property taxes, based on 1938-39 averages, represented 33.8 per cent; corporate income taxes, 32.7 per cent; social security taxes, 22.3 per cent and all other taxes 11.2 per cent. Sixty per cent of the industry's taxes are paid to local, county and state bodies, the remainder going to the Federal Government. The burden of taxes, the publication shows, does not fall equally on all branches within the industry. The taxes compared to sales are 5.4 per cent for pulp companies; 4.3 per cent for integrated pulp and paper companies; 3.4 per cent for paper companies, and 2.2 per cent for paper converting companies.

In comparing the taxes paid by manufacturers in per cent of value added to manufacture it is indicated that the percentage of all manufacturers is 6.53; paper, 9.30 per cent; iron and steel, 11.35 per cent; electrical equipment, 9.43 per cent, chemical, 6.67 per cent, and clothing, 4.56 per cent. In commenting on taxes and the future, the publication states that, "Whatever hopes industry has had for lower taxes during the immediate future have been shattered by recent events in Europe. Government expenditures are running well ahead of revenues, and public debt has reached a new high; and now additional billions are essential for national defense. . . . There is accordingly every indication that the industry's tax load will be heavier before it can be relieved. The only optimistic note can be found in the prospect of increased business and possibly larger taxable incomes. Industry's experience during the first world conflict and the depression has given it some indication of what to expect in times of national emergency; still greater sacrifices may be required."

Visit Site of New Pulp Mill

VANCOUVER, B. C., June 24, 1940—T. H. Bloedel and Prentice Bloedel of Bloedel, Stewart & Welch, Ltd., one of the leading lumber firms in B. C., recently visited Port Alberni, B. C. for the purpose of inspecting the site where their firm proposes to erect a large pulp mill on the west coast of Vancouver Island.

Mr. Prentice Bloedel stated that there were only a few minor details to attend to in connection with the pipe line agreement between the company's mill and the city.

He considered that these points were more or less technicalities and not contentious.

Mr. Prentice Bloedel will occupy a major executive post at the new pulp mill and expressed his confidence on the outlook for a favorable market for the new plant. He points out that while at the present time there is a world shortage of pulp, that the new industry is not being founded on this war time shortage. He added that his company had been considering establishment of a mill at Port Alberni for a considerable period before the outbreak of hostilities in order to cater to the increasing demands of a growing industry.

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES[1]

Months	1940	1939	1938	1937	1936	1935	1934
January	90.2%	77.5%	63.9%	90.3%	76.1%	65.8%	.....
February	86.2%	81.7%	68.7%	90.1%	77.9%	70.0%	.....
March	83.9%	84.0%	69.6%	90.3%	76.0%	70.5%	.....
April	86.3%	82.9%	68.3%	92.1%	82.3%	70.0%	.....
May	91.7%	80.2%	69.0%	90.6%	81.6%	69.4%	.....
June	.....	79.7%	66.0%	87.3%	80.7%	72.3%	.....
July	.....	75.2%	72.0%	81.8%	77.3%	64.9%	.....
August	.....	82.9%	77.2%	82.9%	81.5%	70.9%	.....
September	.....	88.7%	76.3%	78.6%	80.5%	71.9%	58.2%
October	.....	96.6%	82.5%	73.5%	87.6%	75.6%	64.7%
November	.....	97.2%	79.6%	61.9%	88.0%	75.3%	61.7%
December	.....	91.1%	74.4%	54.5%	85.9%	71.2%	59.6%
Year Average.	.....	84.9%	72.3%	80.6%	81.3%	70.5%	.....
First 25 weeks	88.7%	81.1%	67.5%	90.2%	79.1%	69.3%	.....

COMPARATIVE WEEKLY SUMMARIES[1]

CURRENT WEEKS, 1940		CORRESPONDING WEEKS, 1939	
May 18	93.2%	May 20	81.3%
May 25	94.1%	May 27	79.9%
June 1	90.0%	June 3	74.2%
June 8	93.6%	June 10	79.3%
June 15	94.5%	June 17	79.0%
*June 22	96.1%	June 24	79.2%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting—Current Weeks					
Ratio Limits	May 18, 1940	May 25, 1940	June 1, 1940	June 8, 1940	June 15, 1940	June 22, 1940
0% to 50%	42	41	58	36	36	32
51% to 100%	254	256	234	249	234	210
Total Mills Reporting	296	297	292	285	270	242

PAPERBOARD OPERATING RATIOS

Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1936	62%	67%	67%	70%	69%	70%	69%
1937	80%	86%	86%	88%	85%	77%	66%
1938	54%	60%	61%	57%	58%	56%	57%
1939	60%	67%	71%	69%	64%	67%	63%
1940	71%	70%	69%	70%	76%	....	....

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1936	75%	78%	82%	80%	74%	72%
1937	74%	69%	65%	55%	45%	73%
1938	66%	66%	70%	65%	59%	61%
1939	72%	74%	84%	81%	71%	70%
1940	....	....	....	....	....	....

Week end. May 18, 1940—76%
Week end. May 25, 1940—79%
Week end. June 1, 1940—75%
Week end. June 8, 1940—77%
Week end. June 15, 1940—79%
Week end. June 22, 1940—79%

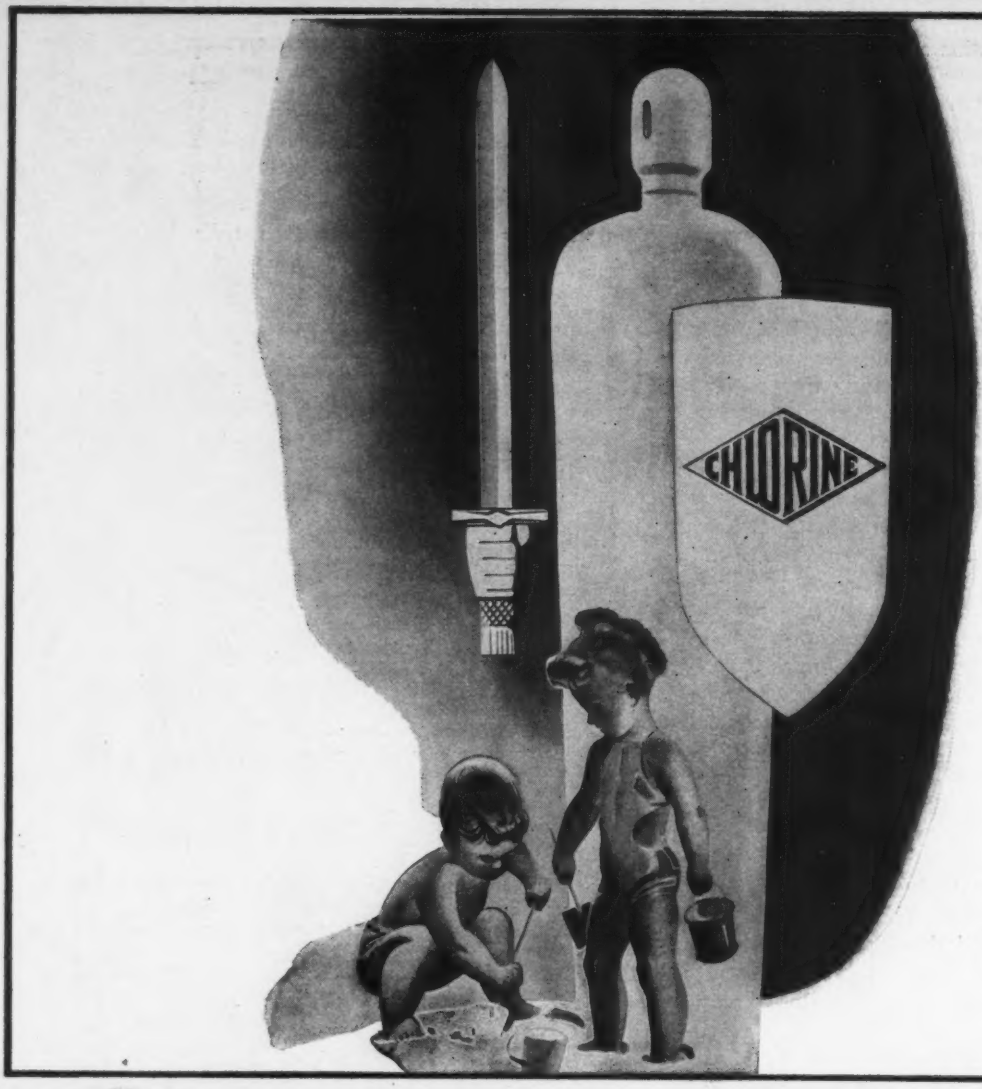
[1] Production-capacity ratios are based upon six-day capacity ratings which are adjusted periodically to correspond with the ratings reported by individual companies. Ratios are subject to revision until all reports are received.

* Preliminary figure.

Hummel-Ross Let Head Box License

Hummel-Ross Fibre Corporation announces the licensing of the Hinde & Dauch Paper Company, Sandusky, Ohio; and the Hinde & Dauch Paper Company of Canada, Toronto, Canada, under United States and Canadian patents for the use of the secondary head box. The first installation will be at the Toronto plant of The Hinde & Dauch Paper Company of Canada. The equipment will be manufactured by The Black-Clawson Company of Hamilton, Ohio.

The secondary head box is a device used on a Fourdrinier machine for improving the sheet and lowering the cost of manufacture. It also can be used to make double sided papers, having a different stock on each side. Several licenses have been issued recently by the Hummel-Ross Fibre Corporation of Hopewell, Va.



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CHLORINE

Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Relation of Lignin Content to the Strength Of Paper and Boards*

II. Preparation of Pulps of Different Lignin Content by Chlorine Dioxide

By C. V. Holmberg[1] and Edwin C. Jahn[2]

Abstract

The effect of chlorine dioxide on northern white pine mechanical pulp was studied to determine the lignin and pentosan changes taking place and to ascertain the suitability of the method for comparison with commercial delignification processes. Between 0.6 and 0.7 g. of chlorine dioxide per gram of pulp or wood are necessary for complete delignification, which at 20 deg. C. takes about 8 days for northern white pine.

A true holocellulose is not obtained from northern white pine by the action of chlorine dioxide nor apparently by the use of chlorine and ethanolamine. High pentosan losses occur, and these are in part due to the degradation of the pentosans in the fines of the mechanical pulp. The greatest loss in pentosans occurs during the removal of the last few per cent of the residual lignin, which indicates an intimate association or combination between this portion of the lignin and a part of the pentosans.

The losses of pentosans from aspen are very much less than from white pine, and a true holocellulose is more closely approached.

Delignification by chlorine dioxide has merit for comparison with commercial methods, because the retention of polysaccharides is much greater and the yields are higher. It is necessary to use a fiber of uniform size and to determine accurately the ratio of lignin to pentosan losses in studying the relation of lignin to the physical properties of the pulp.

Introduction

This investigation is primarily concerned with the relation of lignin and associated compounds to the physical properties of fibers and products made from them. In a study of the relation between the chemical composition of fibers and their physical characteristics it is desirable for practical considerations to re-

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Roosevelt Hotel, New York, N. Y., Feb. 19-22, 1940.

Progress report on the TAPPI Fundamental Research Project at the New York State College of Forestry, Syracuse, N. Y., financially aided by a TAPPI Research Grant from the Research Promotion Committee.

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TABLE I.—PENTOSAN LOSSES IN PREPARING HOLOCELLULOSE

(Based on Literature)

Investigators	Method	Wood	Yield of holocellulose	Lignin in holocellulose, based on original wood, per cent	Pentosans in holocellulose, per cent (Tollen's method)	Loss of pentosans, based on amount in original wood
Heuser & Merlau(2)	ClO_2-Na_2SO_3	spruce	62.71	..	4.44	59.2
Ritter & Kurth(7)	Cl_2—15% alc. pyridine	maple	78.0	1.5	19.1	2.5
Ritter & Kurth(7)	Cl_2—15% alc. pyridine (bleached)	maple	76.2	0	19.0	3.0
Ritter & Kurth(7)	ClO_2—30% aq. pyridine	maple	75.8	0	18.8	4.1
Kurth & Ritter(6)	Cl_2—50% alc. pyridine	spruce	71.3	trace	11.8	6.4
Bird & Ritter(1)	Cl_2—15% alc. pyridine	white oak	75.6	0	17.7	5.35
Houtz & Kurth(3)	Cl_2—3% alc. ethanolamine	spruce	69.2	0.1	8.76	36.1
Houtz & Kurth(3)	Above, over-chlorinated	spruce	58.2	0	4.77	65.0
Van Beckum & Ritter(11)	Cl_2—3% alc. ethanolamine	aspen	82.5	0	23.3	0.86
Van Beckum & Ritter(11)	Cl_2—3% alc. ethanolamine	balsam fir	69.9	0	10.2	0.97
Van Beckum & Ritter(11)	Cl_2—3% alc. ethanolamine	eastern hemlock	68.5	0	6.1	39.0
Van Beckum & Ritter(11)	Cl_2—3% alc. ethanolamine	jack pine	72.5	0	10.9	14.8
Van Beckum & Ritter(11)	Cl_2—3% alc. ethanolamine	red spruce	72.9	0	9.5	19.8
Van Beckum & Ritter(11)	Cl_2—3% alc. ethanolamine	white spruce	73.0	0	9.0	17.5
Jayme, Storch, Keler & Schwab(5)	Cl_2—3% alc. ethanolamine (2 chlorinations)	spruce	77.8	5.6	12.13	...
Jayme, Storch, Keler & Schwab(5)	Cl_2—3% alc. ethanolamine (4 chlorinations)	spruce	67.8	1.46	10.60	...
Jayme, Storch, Keler & Schwab(5)	Cl_2—3% alc. ethanolamine (8 chlorinations)	spruce	62.0	0.3	9.75	...

TABLE II.—DELIGNIFICATION OF NORTHERN WHITE PINE MECHANICAL PULP BY CHLORINE DIOXIDE

(Carried out at 20° C.)

Time of treatment, days	Number of additions of fresh ClO_2 solution	Chlorine dioxide, grams per gram of pulp: Available	Chlorine dioxide, grams per gram of pulp: Consumed	Yield, %	Lignin, % of original pulp	Pentosans, % of original pulp	Loss of pentosans based on amount in original wood
0	0	0	0	100	27.78	12.12	0
0.5	1	0.600	0.240	94.2	16.60	8.10	33.1
1	1	0.250	0.199	92.38	15.32	9.30	23.2
4	1	0.250	0.245	89.73	12.30	9.66	20.3
6.5	1	0.500	0.499	81.78	4.69	8.96	26.1
3	2	0.500	0.388	81.91	4.64	9.12	24.8
6.5	2	0.500	0.450	77.71	2.43	8.46	30.2
5	3	0.750	0.556	74.40	0.86	7.77	35.9
8	3	0.750	0.615	71.25	0.90	7.25	40.1
8	1	0.670	0.660	71.20	0.80	6.50	46.2
8	4	1.000	0.714	67.92	0.54	6.48	46.8

TABLE III.—EFECT OF TEMPERATURE ON DELIGNIFICATION OF WHITE PINE MECHANICAL PULP WITH CHLORINE DIOXIDE.

Temperature, deg. C.	Time, days	Chlorine dioxide, grams per gram of pulp: Available	Chlorine dioxide, grams per gram of pulp: Consumed	Yield, %	Lignin, % of original pulp	Pentosans, % of original pulp	Loss of pentosans based on amount of original pulp
4	10	0.269	0.245	88.50	13.2	10.66	13.5
20	8	0.670	0.660	71.2	0.8	6.50	46.2
25	8	0.673	0.656	71.18	0.75	6.49	46.4
4	0.5	0.708	0.325	97.36	20.0	...	...
20	0.5	0.600	0.240	94.2	16.6	8.1	33.1
25	0.5	0.604	0.240	94.18	16.48	8.13	32.9

late the work to commercial processes and pulps. A series of partially delignified pulps prepared by industrial methods as well as commercial pulps of low lignin content are being studied. The pulps are fractionated so that all samples are uniform with regard to fiber length.

In ordinary delignification processes it is not possible to vary the lignin content without bringing about other chemical as well as physical changes. The development of techniques *(8, 10)* for the isolation of almost all the total carbohydrate fraction of wood would seem to offer a control method of stepwise delignification to compare with the ordinary procedures. Orienting experiments in which northern white pine mechanical pulp was delignified with chlorine water and 3 per cent alcoholic ethanolamine and also with chlorine dioxide were described in the previous paper of this series *(4)*. Appreciable losses in pentosans were observed in all cases.

The preliminary work showed that of the above two methods, aqueous chlorine dioxide was the easier and more convenient procedure for delignifying comparatively large quantities of mechanical pulp and gave a product with a higher degree of freeness. Staudinger and Jurisch *(9)* showed that chlorine dioxide caused almost no degradation of cellulose as measured by viscosity, whereas chlorine water caused a high degree of depolymerization.

Examination of the literature shows that in the preparation of holocellulose from coniferous woods appreciable losses in pentosans occur, whereas the pentosan losses from hardwoods are much less. With one or two exceptions this difference is consistent, as shown by the data compiled in Table I.

Experimental Procedures Used

Aqueous chlorine dioxide solution was prepared as described in the previous paper *(4)*. Northern white pine mechanical pulp and sawdust and aspen sawdust were treated in a number of different ways, i. e., by varying the total chlorine dioxide available, by varying the time, and by adding fresh solution at different intervals as indicated in Tables II, III, IV, and V. The procedures for working up the material and analyzing the product are the same as previously described *(4)*.

Aspen and northern white pine sawdust holocellulose were prepared by the method of Van Beckum and Ritter *(10)* using chlorine gas and 3 per cent alcoholic ethanolamine. The results are shown in Table VI. The use of chlorine water and 3 per cent alcoholic ethanolamine on white pine mechanical pulp was previously described *(4)*.

The mechanical pulp and the Wiley mill ground 60-100 mesh "sawdust" used in this work were extracted with 95 per cent ethyl alcohol and then with alcohol-benzene (33:67). All results, unless otherwise noted, are on the basis of the extracted original wood.

TABLE IV.—ACTION OF CHLORINE DIOXIDE ON DIFFERENT SIZE FRACTIONS OF WHITE PINE MECHANICAL PULP

(Treated 8 days with 3 additions of fresh ClO_2, total available 0.750 g. per gram of pulp, temperature 20 deg. C.)

Screen size, mesh	Original pulp %	Lignin in fraction %	Pentosans in fraction, %	ClO_2 consumed, grams per gram pulp	Yield, original fraction %	Lignin in residue, original fraction %	Pentosans in residue, original fraction %	Loss of pentosans, on amount in original fraction
Held on 18	1.8	....	....	....	....	....	....	...
18—28	13.7	28.12	10.64	0.604	70.04	0.32	6.70	37.0
28—48	16.9	30.42	10.53	0.602	68.61	1.03	6.71	36.2
48—100	17.5	27.44	11.25	0.575	70.36	0.69	6.98	37.9
100+	50.1*	25.68*	13.58*	....	....	....	....	43.2*
Entire pulp	100	27.78	12.12	0.615	71.25	0.90	7.25	40.1
18—100	48.1	31.89	10.67	0.579	70.57	1.90	7.25	31.1
Sawdust 60—100	...	28.80	12.43	0.571	73.00	1.86	8.72	29.8

* Calculated from values on other fractions and on the total pulp.

TABLE V.—DELIGNIFICATION OF ASPEN AND WHITE PINE WOODS BY CHLORINE DIOXIDE

(Carried out at 20 deg. C.)

Time of treatment, days	No. of additions of fresh ClO_2 solution	Chlorine dioxide, grams per gram pulp: Available	Chlorine dioxide, grams per gram pulp: Consumed	Yield, %	Lignin, % of original wood	Pentosans, % of original wood	Loss of pentosans, based on amount in original wood
Aspen wood, 60—100 mesh							
0	0	0	0	100	17.26	22.79	0
2	1	0.250	0.211	88.45	4.78	22.15	2.8
4	2	0.500	0.340	83.97	3.78	21.40	5.9
8	3	0.750	0.480	82.75	0.17	20.23	11.2
Eastern white pine wood, 60—100 mesh							
0	0	0	0	100	28.80	12.43	0
2	1	0.250	0.208	92.99	20.20	10.80	13.1
4	2	0.500	0.395	83.44	8.62	10.05	19.1
8	3	0.750	0.571	73.00	1.86	8.72	29.8

Factors Affecting Delignification with Chlorine Dioxide

Examination of Table II shows that about 0.6 to 0.7 g. of chlorine dioxide per gram of wood is necessary for delignification. The method of adding the aqueous solution of chlorine dioxide, whether in one batch or in successive additions over a period of days, makes no significant difference. Under the conditions used complete delignification of northern white pine mechanical pulp takes about 8 days.

Table III shows that the rate of delignification at 4 deg. C. is much slower than at 20 or 25 deg. C. There is comparatively little difference in the results obtained at 20 and 25 deg. C.

Pentosan Losses During Delignification with Chlorine Dioxide

Table I shows the relatively high pentosan losses obtained by different investigators in the preparation of coniferous holocellulose. The unusually high pentosan losses recorded in the previous paper *(4)* were obtained with mechanical pulp. It was thought that these high values might be due in part to degradation of the fines in the pulp. A portion of pulp was separated into several fractions, according to fiber size, by means of a fiber classifier. These fractions were analyzed and treated with chlorine dioxide and the results compared with the original pulp (Table IV). The fines evidently have a lower lignin and a higher pentosan content than the larger fibers or the pulp as a whole, which is to be expected since they probably contain a higher proportion of parenchymatous tissue.

The losses of pentosans in the larger sized fractions are less than in the total pulp by about 3 per cent (although in the largest-sized fraction the lignin content was much less than in the others, indicating that on comparable lignin bases the pentosan losses in this fraction would be still less). The pentosan losses in the fines are at least 6 per cent greater than in the larger fiber fractions. A portion of the pentosan losses can, therefore, be attributed to degradation of pentosans in the fines.

Comparison of 60-100 mesh ground sawdust with 18-100 mesh mechanical pulp delignified to the same extent (1.9 per cent lignin) show about the same pentosan loss (30 per cent).

Aspen wood (60-100 mesh) is delignified more readily by chlorine dioxide than is northern white pine and yields a holocellulose with a much greater retention of pentosans, the loss being 11.2 per cent for nearly completely delignified material (0.17 per cent lignin) (Table V).

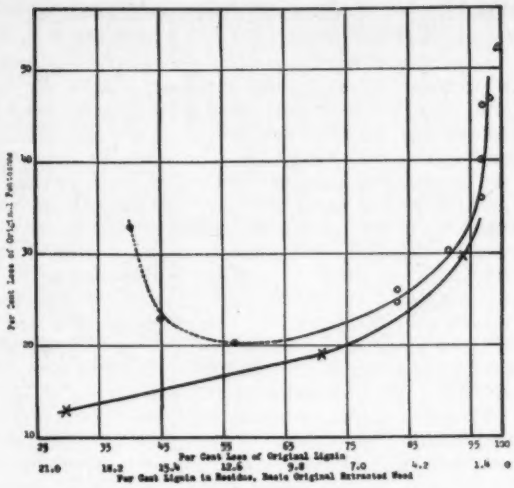
Per Cent Loss of Original Pentosans
Per Cent Loss of Original Lignin
Per Cent Lignin in Residue, Basis Original Extracted Wood

FIG. 1.

Relation of Pentosan Loss to Lignin Loss by Action of ClO_2 on Northern White Pine. ○ = Mechanical Pulp. × = 60-100 Mesh Sawdust. Δ = Action Cl_2 and $NH_2CH_2CH_2OH$ on 60-100 Mesh Sawdust.

The greatest loss in pentosans occurs during the removal of the last few per cent of residual lignin. This is clearly shown in Fig. 1, where the curve for pentosan losses sharply rises after the removal of about 95 per cent of the lignin, i. e., during the removal of the last 1.5 per cent of residual lignin (basis of original extracted wood). For example, the reduction of the lignin content in aspen from 17.26 per cent to 4.78 per cent is accompanied by a pentosan loss of only 2.8 per cent, whereas upon decreasing the lignin to 0.17 per cent, the pentosan losses increase to 11.2 per cent of the original pentosans. In the case of white pine mechanical pulp, the removal of 0.1 per cent of lignin when only 1.4 per cent or less of the original lignin remains is accompanied by a loss of 1.75 per cent of pentosans, whereas during the first stages of delignification the losses are much less. Thus in dropping from the original lignin content to 12 per cent, each 0.1 per cent decrement is equivalent to a loss of about 0.1 per cent of the original pentosans. These facts make it essential that pentosan losses are compared on samples which have like lignin contents.

The suddent increase in pentosan losses during the removal of the last portion of the lignin with chlorine dioxide indicates that this part of the lignin is in

TABLE VI.—DELIGNIFICATION BY CHLORINE AND BY CHLORINE DIOXIDE METHODS

Material	Method	Lignin in original wood, %	Pentosans in original wood, %	Yield, %	Lignin in residue, % original wood	Pentosans in residue, % original wood	Loss of pentosans based on amount in original wood
Aspen wood, 60-100 mesh	Cl_2 gas & 3% alc. ethanolomine (8 chlorinations, total 24 min.)....	17.67	23.8	80.66	0.22	20.81	12.6
Aspen wood, 60-100 mesh	ClO_2 & aq. pyridine (8 days & 0.750 g. ClO_2 per g. wood)	17.26	22.79	82.75	0.17	20.23	11.2
Eastern white pine wood, 60-100 mesh	Cl_2 gas & 3% alc. ethanolomine (12 chlorinations, total 36 min.)...	28.96	13.81	63.68	0.13	6.64	52.2
Eastern white pine wood, 60-100 mesh.....	ClO_2 & aq. pyridine (8 days & 0.750 g. ClO_2 per g. wood)	28.80	12.43	73.00	1.86	8.72	29.8
Eastern white pine mechanical pulp.....	ClO_2 & aq. pyridine (5 days & 0.750 g. ClO_2 per g. pulp)	27.78	12.12	74.40	0.86	7.77	35.9
Eastern white pine mechanical pulp.....	ClO_2 & aq. pyridine (8 days & 1.000 g. ClO_2 per g. pulp)	27.78	12.12	67.92	0.54	6.48	46.8
Eastern white pine mechanical pulp.....	Cl_2 water & 3% alc. ethanolamine (3 chlorinations, total 15 min.)....	27.40	12.12	83.17	1.70	8.65	28.6

intimate association or chemical combination with a part of the pentosans.

In the case of northern white pine mechanical pulp the pentosan losses during the early stages of delignification are high and these losses decrease with greater lignin removal until about 50 per cent of the lignin is removed (Fig. 1). These results are contrary to expectations, and since the trend of pentosan losses on 60-100 mesh pine sawdust are of normal expectation, the anomalous results with the pulp might be due to the large percentage of fines and the wide range in particle size. Possibly during the early stages of treatment with chlorine dioxide the lignin in the fines, where the surface exposed is large, is altered so that it condenses with a portion of the furfural produced during distillation with 12 per cent hydrochloric acid during the pentosan analysis. This would cause an apparent pentosan loss. Should losses occur in this way, then of course they would be encountered in small degree with any material with considerable residual lignin which had been treated with chlorine dioxide.

Delignification of northern white pine with chlorine gas and 3 per cent alcoholic ethanolamine until a snow white material is obtained with practically no lignin also causes high pentosan losses as shown in Table VI. The pentosan losses for both aspen and northern white pine treated in this way compare with the values obtained by chlorine dioxide, if products are compared having the same lignin content. The length of time that the material is exposed to chlorine evidently greatly influences the pentosan losses. The large number of chlorinations used to get a pure white material probably account for the high pentosan losses. This is also borne out by the work of Jayme, Storch, Kerler, and Schwab *(5)* and also of Houtz and Kurth *(3)* (Table I). Jayme *et. al.* showed a much larger loss in pentosans, when spruce was chlorinated 8 times as compared with 4 chlorinations. Houtz and Kurth showed that over chlorination of spruce holocellulose almost doubled the pentosan loss—from 36 to 65 per cent.

Significance of the Results in Relation to the Study of the Effect of Lignin Content on the Physical Properties of Fibers

It is apparently not possible to prepare a true holocellulose from northern white pine and, on the basis of the literature, probably not from most other coniferous woods by either the chlorine-ethanolamine method or the use of chlorine dioxide. A true holocellulose can be closely approached with aspen and, according to the literature, with other hardwoods.

The pentosan losses in northern white pine are due in part to degradation, as shown by the greater losses on mechanical pulp with 50 per cent of fines, than on the fibers with the fines removed. Part of the losses are evidently due to removal of pentosans in intimate association or in chemical combination with the lignin, particularly with the last portions of the lignin removed. Part of the losses may be apparent rather than real. Van Beckum and Ritter *(11)* show that a portion of the furfural from holocellulose is not accounted for by the Tollen's method and they suggest a difference in the furfural yielding material between wood and holocellulose. The lignin in the wood may yield aldehydes which precipitate phloroglucinol, giving a higher apparent pentosan content in the original wood. Northern white pine lignin isolated by 70 per cent sulphuric acid yielded, when distilled with 12 per cent hydrochloric acid, a material which precipitated phloroglucinol and which, when calculated as pentosan, amounted to 0.48 per cent of the original extractive free wood. Probably all of the above factors and possibly others account for the sum of the pentosan losses.

In spite of the unavoidable pentosan losses in treating white pine with chlorine dioxide the procedure has merit in preparing a series of delignified pulps for comparison with commercial methods, because the retention of polysaccharides is much greater, the yields are higher, and on the basis of Staudinger and Jurisch's work *(9)* there is very little degradation of the cellulose. Van Beckum and Ritter *(11)* also showed that their holocellulose procedure caused less cellulose degradation than the Cross and Bevan procedure. In using either holocellulose procedure in a study of the relationship of lignin to the physical properties of the fibers, the results of this work show the necessity of using a fiber of uniform size and also of accurately determining the ratio of lignin to pentosan losses. The use of chlorine dioxide for preparing a series of partially delignified aspen or other hardwood mechanical pulps should give results easier to interpret than in the case of softwoods.

Conclusions

Chlorine dioxide in aqueous pyridine solution furnishes a convenient method of delignification and for arresting the process at any stage for examination of the partially delignified product.

Products of high yield and with little hydration are obtained.

Between 0.6 and 0.7 g. of chlorine dioxide per gram of wood are necessary for complete delignification, which at 20 deg. C. takes about 8 days for northern white pine. The lower the temperature the slower the rate of delignification.

A true holocellulose cannot be prepared from northern white pine by the use of chlorine dioxide or of chlorine-ethanolamine.

Aspen yields a product more closely approaching a true holocellulose.

Particle size influences the amount of pentosans lost in the chlorine dioxide treatment of nothern white pine mechanical pulp.

The greatest loss of pentosans occurs during the removal of the last 1.5 per cent of residual lignin by chlorine dioxide, indicating that this lignin is in intimate association or chemical combination with part of the pentosans.

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Statistical Survey of Rosin As Used In the Paper Industry*

By P. K. Baird[1] and C. E. Curran[1]

Abstract

Rosin is the principal sizing agent for paper at the present time, and for the past two decades the demand for rosin by the paper industry has controlled to a great extent the price and production of this naval stores product. The technological position of rosin is strong and will probably continue so in spite of the availability of possible substitutes. The supply is ample, the cost low, and the technical use problems less numerous and complex than for any substitutes thus far tried.

History of Rosin Size

The American naval stores industry originated shortly after the settlement of Jamestown in Virginia in 1607. The forests of the new world were quickly found to yield the tar, pitch, and turpentine so greatly in demand by the British navy and merchant marine and up to that time obtained from Russia through the hostile Baltic region.

The new industry flourished. Turpentine commanded a price of $90 per ton, and there was a good market for tar and pitch. Rosin, however, had but few uses. At first there was no separation of turpentine from rosin, the crude gum being exported. Later a separation was effected, probably as a means of saving in freight costs. Since the production of a barrel of turpentine resulted in a byproduct of three barrels of rosin, the latter soon became a liability. Eventually this apparently useless waste product was dumped into ravines, ponds, and rivers where it solidified. Immense quantities of rosin were disposed of in this manner.

This situation continued in the American naval stores industry until about 1807 when Illig in Germany discovered the suitability of rosin soap as a "sizing" or waterproofing agent for paper. However, this use developed slowly. The existing naval stores industry easily met the rosin needs of the papermaker from current production. In the meantime the American naval stores industry was gradually centering in the southeastern states, particularly Georgia, Florida, and Alabama.

About 1900, with the dwindling of the virgin pine forest, the demand for rosin as a papermaking chemical began to increase greatly. The previously dumped rosin was "mined" at this time, and it helped to supply the multiplying needs of the paper industry during the first decade of the present century.

In 1909 a new source of rosin became available to the paper industry when Yaryan developed the solvent process used to extract rosin from waste pine wood. This produced turpentine, pine oils, and rosin of an acceptable quality, and was the beginning of a new branch of the naval stores industry.

Use of Rosin Size in Paper

Starch was probably the first material used for sizing paper. However, starch was not particularly efficient, and it was found by experimentation that the addition of small amounts of rosin size greatly enhanced the waterproofing effect without injuring the soft surface characteristics imparted to the sheet by starch alone. Subsequently, the use of rosin size to replace glue and gelatin in the cheaper papers increased so that by 1900 there was a rapidly growing market for rosin for the common grades of papers.

Thus rosin has become one of the required chemicals along with starch, glue, gelatin, casein, silicate of soda, dextrin, waxes, and others in the technology of the sizing of paper.

From the beginning of the use of rosin by the papermaker until quite recently, the artisan prepared the size locally from the raw chemicals. It had been common practice to select, break up, and melt the proper grade of rosin, add from 10 to 17 per cent by weight of soda ash, or the equivalent of sodium hydroxide, and cook for several hours to complete saponification.

The product was a viscous liquid soap which, when added to the beater either direct or after dilution with water to a "milk of size," would be "set" or coagulated by "alum" (aluminum sulphate) and yield a paper of superior water resistance. The two most common types were the "neutral" and "free" rosin sizes. The neutral sizes have sufficient combined alkali (about 17 per cent) to neutralize completely the acidic components in the rosin, whereas the free sizes do not.

Commercial Size Manufacture

About 1922 commercially prepared rosin size suited to the paper trade was introduced. This development has had a pronounced influence on the practices and economics of both the paper and rosin-producing industries.

Commercial manufacturers now produce practically all the size for the paper industry having replaced the locally prepared product with one more uniform and equally low priced. The purchase of prepared size simplified the plant operations, released valuable space for other purposes, and greatly lowered the raw materials inventory of rosin and soda ash.

Chemistry of Rosin Sizing

There are three commonly used procedures of applying size of one kind or other to papers. The oldest is called "tub," "vat," "animal," or "surface" sizing and uses glue, gelatin, starch, casein, dextrin, etc. As the term implies, the material is put on the surface by dipping or running the partially or wholly dried sheet of paper through the vat with subsequent drying. The second process is "engine" sizing, a term derived from the "beater engine." Most rosin sizes

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* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Roosevelt Hotel, New York, N. Y., Feb. 19-22, 1940.

[1] Member TAPPI; Senior Chemist and Principal Chemist, respectively, Forest Products Laboratory[2], Forest Service, U. S. Dept. of Agriculture.

[2] Maintained at Madison, Wis., in cooperation with the University of Wisconsin.

are put in beaters as soluble soaps to mix with pulp and are then precipitated as "free" rosin by alum. The third and newest method for sizing paper is "solvent" sizing. In this process the rosin is dissolved in volatile organic solvents, the vapors of which are capable of being easily condensed, and the sheet is run through this solution for rosin absorption with subsequent drying in an evacuated system for efficient recovery of the solvent.

Among the modern developments are the following sizing systems, aimed at the more efficient application of rosin size to papers: the *DeCew*, the *Delthirna*, and the *Bewoid* processes, as well as *Dobler's* tub sizing with rosin. Each claims special economies and advantages. The solvent sizing process, as previously indicated, is applicable only to mills especially equipped with drier vapor recovery systems and, therefore, is not in general use.

The *Bennett* and other processes using wax with rosin to assist in stabilizing the emulsion are of recent development. These processes use paraffin and rosin in a variety of combinations from 10 to 90 per cent paraffin, often with small additional amounts of montan and other special waxes. Wax used in this manner at present constitutes one of the strongest competitors of rosin in the paper industry.

The present state of knowledge of the mechanism of sizing is admittedly incomplete, there being various theories as to how the water resistance is achieved. The following unrelated facts are pretty well established:

(1) The compounds producing the sizing effect are aluminum resinate (abietiate and other acids) and free rosin, the latter produced by an excess of alum over that necessary to neutralize the rosin soap.

(2) Sizing is in most cases an external or surface phenomenon, the rosin penetrating the pores of the sheet but not the fibers themselves.

(3) The amounts of rosin used are generally small (1 to 3 per cent) and the sizing effect cannot be achieved without hot drying, a temperature of at least 175 deg. F. being required.

(4) There is no advantage of free over neutral rosin-size soap except for saving in chemicals, labor, and steam required for saponification and precipitation.

(5) Rosin sizing is said to assist in the penetration of oil from printing inks into paper as well as to reduce sheet fuzz and softness.

(6) The two disadvantages of rosin are its aging effect (weakening) on the strength properties and its discoloration of the sheet, both probably due to its acidic nature.

Rosin Sizing and Paper Grades

Rosin size is used in practically all grades of papers except such specialties as parchment (where a waterleaf sheet is required for further processing), tissues, absorbents, and certain high grades of permanent character. The requirements of use of paper determine the amount of sizing applied to any particular sheet. The effect is to make the sheet water resistant and to lay the fibers solidly, thus preventing a fuzzy surface that does not print well.

Also the amount of rosin size used in any particular grade varies somewhat from mill to mill and time to time, depending upon the economic and competitive conditions in the various grades. Fortunately, the ranges of size used are narrow and it is possible to estimate for each grade with fair precision due to general mill practices.

Newsprint, the largest (except paperboard) from the tonnage standpoint, uses the least size of the common grades except tissues and absorbent papers. About 1922, the newsprint mills reduced the amount of size in the sheet from 1 per cent to ¼ per cent, which is about the average amount now used, some using none and others more. The water resistance requirements of newsprint are low, inasmuch as there is no occasion for use of writing inks. Paperboard uses up to 1 per cent, averaging about ½ per cent depending on the particular type of board and the use that is being made of it. Geographical and seasonal requirements also affect the amounts of sizing applied to paperboards. Book paper ranks next in the amount of size used. As previously mentioned it is put in book furnishes to lay the fuzz and harden the surface for better printing. The amounts used vary up to 3 per cent and average about 2 per cent. The requirements of use of book papers also demand a reasonable protection against moisture to maintain the physical dimensions and appearance of the finished product. Wrapping and bag papers as a grade use up to 4 per cent but average about 2 per cent. Bonds and other fine papers require the most size of high grades to prevent the "feathering" of writing inks as well as to produce other qualities in the sheets. Between 2 per cent and 8 per cent of rosin is used on these grades, with an average of about 3 per cent.

Past Trends in Use of Rosin in Paper

The market for rosin in the paper industry was already one of the principal outlets for this naval stores product at the turn of the century. This demand was directly related to the amount of rosin used in papers and the tonnages of the various grades of papers manufactured during any particular period. Unfortunately, there is no precise information available on the amount of rosin used in the various grades until recent years. In all probability, there has been little change for all grades other than newsprint since 1900, except as influenced by the price of rosin at various periods.

The production of newsprint from 1914, and of all grades combined except for some early omissions, from 1899 to 1938 in the United States, is given in Table I. For the major grades, other than newsprint, the production tonnages can be considered approximately the same as the consumption values given in Table II, due to the small exports and imports.

The estimated amounts of rosin size used in the various major grades are shown in Table III and represent the present and past manufacturing practices for these grades.

The rapid growth of the paper industry has had a tremendous influence on rosin consumption in the United States, particularly since 1921. The production of all grades of paper in the United States from 1899 to 1919 increased at the rate of 2,000,000 tons for each decade and totaled 6,098,530 tons in 1919. By 1929 it had increased to 11,140,235 tons. After that date, due to the economic depression, there was an irregular decrease to 7,997,872 tons in 1932 with a resumption to 9,190,017 tons in 1933, to 9,186,598 tons in 1934, and to 11,380,814 tons in 1938. Other values are also given in Table I.

TABLE I.—REPORTED PAPER PRODUCTION FOR NEWSPRINT AND ALL GRADES IN THE UNITED STATES, 1899-1938.

Year	Newsprint Tons	All grades Tons
1899	....	2,167,593
1904	.....	3,106,696
1909	.....	4,216,708
1914	1,313,284	5,270,047
1917	(1,359,000)	(5,919,647)
1918	(1,260,000)	(6,051,523)
1919	1,323,880	6,098,530
1920	(1,512,000)	(7,334,614)
1921	1,237,408	5,431,265
1922	(1,448,000)	(7,017,800)
1923	1,521,080	8,029,482
1924	(1,481,000)	.....
1925	1,563,318	9,182,204
1926	(1,684,000)	.....
1927	1,516,929	10,002,070
1928	1,415,450	10,403,338
1929	1,409,169	11,140,235
1930	1,226,086	10,169,140
1931	1,203,263	9,381,840
1932	1,047,047	7,997,872
1933	928,332	9,190,017
1934	989,705	9,186,598
1935	947,717	10,479,095
1936	938,287	11,975,552
1937	975,854	12,837,003
1938	832,331	11,380,814

Source: Bureau of the Census for Forest Products and for Manufactures, except the data in paratheses, which are from the News Print Service Bureau and do not check others.

The great dependence of the naval stores industry upon the paper industry as a rosin market is emphasized by the fact that the latter has been one of the chief consumers of rosin during the last three decades and now takes more than one-third of the annual rosin production.

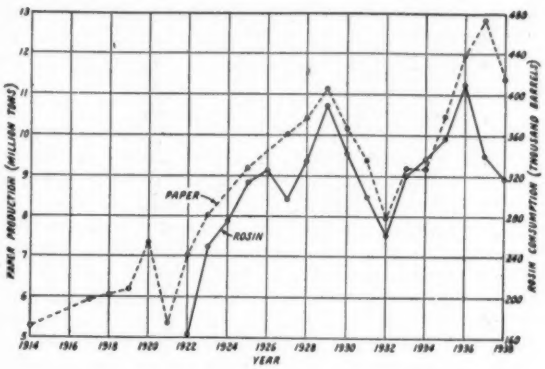

FIG. 1.
Paper Production Versus Rosin Consumption for Paper. 1922 to 1938.

TABLE III.—THE AMOUNTS OF ROSIN SIZE USED IN VARIOUS GRADES OF PAPERS.

Grade	Size range %	Estimated average amount %
Newsprint	0 to 1	¼
Book	0 to 3	2
Board	0 to 1	½
Wrapping and bag	½ to 4	2
Fine	2 to 8	3
Others	0 to 1	¼

Source: Consensus of opinions by authors and others familiar with paper manufacturing practices.

The total rosin consumption for papermaking purposes in the United States from 1922 to 1938 is shown in Table IV. The close relationship between rosin consumption and paper production in the United States since 1922, except for brief periods about 1927 and 1937-38, is shown in Fig. 1. Statistics and other related facts should disclose whether these irregularities in 1927 and 1937-38 were due to technological changes or to economic causes. The possible use of substitutes should be considered, or possibly an excessively large tonnage production in low rosin-content papers.

Unfortunately for the rosin producers, newsprint, one of the two largest tonnage groups of papers, news and board, now uses only a nominal amount of sizing, if any. Until about 1921, the average sizing in American newsprint was approximately 1 per cent of rosin by weight. At that time, there was a general revision of newsprint manufacturing and most mills reduced the size content to a fraction of what had been the former practice, some even dispensing with it entirely.

TABLE IV.—ROSIN CONSUMPTION IN THE PAPER INDUSTRY IN THE UNITED STATES. 1922-1938.

Year	Barrels of rosin	Tons net[1] rosin
1922	162,353	34,094
1923	248,856	52,260
1924	275,353	57,824
1925	313,365	65,807
1926	325,312	68,316
1927	297,426	62,459
1928	333,942	70,128
1929	388,310	81,545
1930	341,327	71,679
1931	299,934	62,986
1932	261,000	54,810
1933	320,940	67,397
1934	337,000	70,770
1935	357,143	75,000
1936	410,775	86,263
1937	340,200	71,442
1938	318,361	66,856

[1] Based on a barrel weighing 500 lb. yielding 420 lb. of rosin.
Source: Gamble's International Naval Stores Year Book, 1939-40, page 83, quoted from the Bureau of Chemistry and Soils, U. S. Department of Agriculture.

TABLE II.—CONSUMPTION[1] OF PAPER BY KINDS, TOTAL AND PER CAPITA, SPECIFIED YEARS 1810-1937[2]

Year	Population	Newsprint		Book		Paperboard		Wrapping		Fine		All other		All kinds	
	Millions in U.S.A.[3]	1,000 short tons	Lb. per capita	1,000 short tons	Lb. per capita	1,000 short tons	Lb. per capita	1,000 short tons	Lb. per capita	1,000 short tons	Lb. per capita	1,000 short tons	Lb. per capita	1,000 short tons	Lb. per capita
1810	7,239	....	..	....	..	....	..	....	..	....	..	....	..	3[4]	1
1839	16,600	....	..	....	..	....	..	....	..	....	..	....	..	38[4]	4
1859	34,000	....	..	....	..	....	..	....	..	....	..	....	..	127[4]	8
1879	48,866	....	..	....	..	....	..	....	..	....	..	....	..	457	18
1899	74,798	569	15	314	8	394	11	535	14	113	3	233	6	2,158	57
1904	82,601	883	21	495	12	521	13	644	16	142	3	365	9	3,050	74
1909	90,691	1,159	26	689	15	883	19	763	17	193	4	537	12	4,224	93
1914	97,927	1,576	32	926	19	1,292	26	892	18	244	5	566	12	5,496	112
1919	105,003	1,892	36	838	16	1,940	37	825	16	306	6	692	13	6,493	124
1922	109,040	2,451	45	968	18	2,154	39	1,059	19	356	6	1,015	19	8,003	146
1925	114,035	3,073	54	1,365	24	3,290	57	1,287	22	472	8	1,103	19	10,590	184
1926	115,700	3,517	61	1,408	24	3,637	63	1,435	25	495	8	1,315	22	11,807	203
1927	117,364	3,492	60	1,265	20	3,737	64	1,515	26	502	8	1,404	24	11,915	202
1928	119,029	3,561	60	1,321	22	4,009	67	1,457	24	538	9	1,562	26	12,448	208
1929	120,694	3,813	63	1,471	24	4,398	73	1,586	26	593	9	1,490	25	13,351	220
1930	122,775	3,496	57	1,370	22	4,014	66	1,556	25	564	9	1,251	20	12,251	199
1931	123,687	3,261	53	1,195	19	3,795	61	1,383	22	480	8	1,116	18	11,230	181
1932	124,579	2,831	45	935	15	3,297	53	1,234	20	418	7	885	14	9,600	154
1933	125,387	2,711	43	1,069	17	4,055	65	1,425	23	472	7	1,130	18	10,862	173
1934	126,234	3,176	50	1,046	17	4,033	64	1,329	21	409	6	1,166	18	11,159	176
1935	127,152	3,304	52	1,273	20	4,652	73	1,616	25	495	8	1,249	19	12,589	197
1936	128,024	3,671	57	1,434	22	5,414	85	1,874	29	590	9	1,513	24	14,496	226
1937	128,877	4,261	66	1,555	24	5,749	89	2,034	31	560	9	1,709	27	15,868	246

[1] Imports added to United States production and domestic exports deducted.
[2] From Agricultural Statistics, 1939, page 551, Table 684, and Bureau of the Census estimates.
[3] Except for 1910, 1920, and 1930, these are estimates by the Bureau of the Census, and those for 1839 and 1859 are interpolations.
[4] Domestic production only, value of exports and imports being approximately equal.

As a result, a large decrease in the rosin demanded for paper would have been experienced had not the American consumption of newsprint been expanding at the rate of about 200,000 tons annually as shown in Fig. 2. This same increase in consumption was experienced in many other countries, particularly Canada and the British Empire, using Canadian and European newsprint, which papers contained much American rosin. Thus, the loss was counteracted to a great extent. Unfortunately, of this increase in consumption the American paper manufacturer was realizing a disproportionate small part due to the large importations (shown by the production and imports curves in Fig. 2), but the newsprint production increase was substantial enough up to 1926 to offset rosin tonnage losses caused by the downward revision of its rosin content. After 1926, the American newsprint production began to drop about 100,000 tons per year, which accentuated the general decrease in rosin tonnages required in the United States for paper. This accounts in part for the drop in the total rosin consumed annually between 1926 and 1929 as shown in Fig. 1, although the most important factor probably was the increase in the price of rosin.

In the case of paperboard, the unusually large increases in the tonnages produced from 1921 to 1929 were of great aid in compensating for the loss in rosin demand for newsprint even though the percentage of size in paperboards is also rather low, averaging ½ per cent.

The percentages of rosin size used in the other grade-groups of wrapping, book, fine, and others require no particular comment, as there were few changes in the technology of manufacture of these papers to influence the total amount of rosin used by the industry. Even the increase in the price of rosin would not greatly change the demand for these grades of paper.

The average yearly price per barrel for the upper common grades of rosin, *F*, *G*, and *H*, during the period 1921 to 1938 are given in Table V. Periods of comparatively high rosin prices such as 1926 to 1929 and 1937 to 1939 with the prices advancing to about 4.2 and 2.5 cents per lb., respectively, reacted definitely against the liberal use of rosin in paper. However, the general tonnage loss between 1929 and 1936 in the paper market (Fig. 1) was not entirely due to the higher price of rosin. It was probably also due to a sizeable decline in the production of newsprint in the United States after 1926 and total production

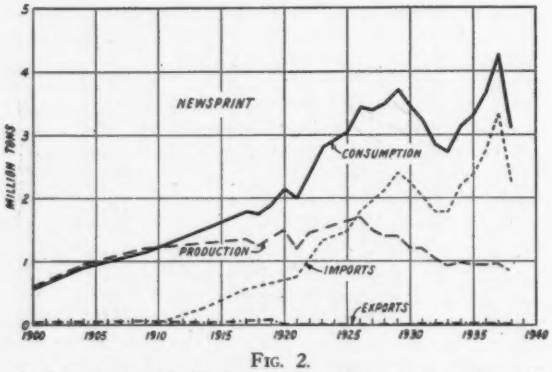

FIG. 2.
The Consumption, Production, Imports and Exports of Newsprint. 1899 to 1938.

TABLE V.—AVERAGE QUOTATIONS OF PAPERMAKING GRADES OF ROSIN FROM 1921 TO 1939

Year	F	G	H	I
1921-22	$4.175	$4.20	$4.225	$4.275
1922-23	4.975	5.00	5.00	5.00
1923-24	4.60	4.60	4.60	4.60
1924-25	5.65	5.65	5.70	5.70
1925-26	11.30	11.35	11.375	11.40
1926-27	11.60	11.65	11.70	11.90
1927-28	8.15	8.20	8.225	8.25
1928-29	8.00	8.05	8.10	8.10
1929-30	7.35	7.375	7.40	7.425
1930-31	4.725	4.75	4.80	4.80
1931-32	3.225	3.30	3.375	3.40
1932-33	2.55	2.60	2.65	2.70
1933-34	3.875	3.875	3.90	3.925
1934-35	4.425	4.475	4.525	4.55
1935-36	4.275	4.35	4.375	4.40
1936-37	6.825	6.85	6.85	6.85
1937-38	6.825	6.85	6.90	6.90
1938-39	4.40	4.70	4.75	4.75

Source: Gamble's International Naval Stores Year Book, 1939-40, page 102. Prices are for 280-lb. barrels.

of all grades after 1929 up to 1936 as shown in Table I and in Fig. 1.

Thus, the two main factors affecting the course of the relation shown in Fig. 1 were the relatively high rosin prices for the periods and probably the effect of large increases in the production of the other low rosin-content grades of papers, particularly boards.

On the whole, the trends of actual rosin consumption show a close relation to total paper production and provide a rough basis for estimating the future rosin requirements of the paper industry. For example, by use of tonnages from Tables I and IV, calculations show that in 1923 there were 32 tons of paper produced for each barrel of 420 lb. of rosin used. For 1923 and 1925, and from 1927 to 1938, similar calculations gave 32 and 29, and 34, 31, 29, 30, 31, 31, 29, 27, 29, 29, 38, and 36 tons per barrel of rosin, respectively.

Technological Position of Rosin

It is a generally accepted fact that rosin is the cheapest organic acid available for commercial purposes. Not only is its low cost essential to the paper industry where most of the product is sold under 5 cents per lb., but it has those special unique properties of waterproofing cellulose, of being a weak acid, of being a semiplastic solid, of being practically colorless, and of having a melting point suited to the drying range of temperatures employed in the papermaking process.

In fact, rosin could hardly be surpassed for present papermaking purposes by any known compound. In addition, it is abundantly available in nature at a price far below that at which any synthetic product probably could be marketed. At least as far as its use in paper is concerned there are no complex or annoying technological problems confronting its continued production at the same low price enjoyed by the paper industry for many decades.

Rosin Grade and Quality Relations

The grades of rosin most commonly used in the paper industry are the upper common grades, *F*, *G*, and *H*, with recent practices including *E* and *I*. There is little need for close selection of grades for the common grades of papers inasmuch as the slight coloring effect of the small amounts of rosin used is negligible. In a few special grades the paper trade requires the lighter clearer sizes produced from *H* or *I* grades. The still clearer grades are too expensive and unnecessary and find a market in other finer chemical uses.

Since 1922, as previously mentioned, most of the rosin size used in the paper industry has been made

by the large manufacturers of prepared rosin size. The advantage accruing from this change was not entirely for the paper manufacturer but also benefited the factor and rosin producer in that the blending of light and dark grades to match the upper common grades was started, something that was not formerly acceptable to the paper trade. This practice relieved the overproduction of certain grades restricted by price or color. Although the rosin now used probably averages one or two grades lower than formerly, there has been no injury to the paper quality and much benefit to the rosin producers and factors as indicated.

Fortunately there is little difference in the prices of the common grades of rosin acceptable to the paper trade, which simplifies the manufacture and marketing of rosin size into a minimum number of grades and degrees of saponification or free rosin contents. These simple conditions help to keep the size prices low and to encourage the continued and regular use of rosin, affected to a minimum by market reserves, crop yields, or special demands for specific grades of rosin sizes.

Substitutes

So far there has been developed no truly satisfactory, cheap substitute for rosin as used in the paper industry. New products in the field of sizing, such as waxes, starches, soya bean and corn proteins, are not yet replacing rosin but are being used with it. They generally improve or modify some sheet property other than or in addition to the water resistance, which rosin size produces so effectively.

Tall oil, made from waste sulphate liquors, and asphalt emulsifying agents are coming into use for combination with the dark rosins for certain low-grade paper products. These products probably increase the use of rosin by improving its plastic properties and can hardly be considered substitutes.

Wood rosin, if it can be considered a substitute, is the only other competitor, excepting the waxes. The color of wood rosin has in the past been somewhat inferior and offshade to gum rosin and has handicapped its general acceptance by the trade. These defects may have been corrected in the refining methods used to raise the color.

Waxes generally used in conjunction with rosin to impart additional sheet properties sell for around 6 cents per pound.

The newer synthetic resins in use to waterproof papers cannot as yet be properly classed as sizing agents, inasmuch as they are used as fiber coating materials only in special cases and are not competitive with rosin. Some of these are glyptal, bakelite, vinylite, cumar, and urea resins.

The most recent sizing development which has received any commercial attention is the use of a so-called "casein" sizing agent produced from soya bean. It is finding a place along with the other materials previously mentioned to impart certain additional sheet properties to paper, but due to its chemical nature it probably will be more of a competitor of casein than of rosin.

Research Might Improve Position of Rosin in Paper

Generally speaking the properties of rosin are well adapted to current papermaking practice. However, if an economical method for bleaching the darker grades was found, the use of this product would be encouraged, particularly if the increased supply would lower the price slightly.

Another field for study would be the production of a less acid and more stable product to minimize the "aging" effect that rosin has on the physical, particularly strength properties of papers containing its aluminum preciptation product.

Also, more needs to be learned about the role of rosin as a sizing agent and the chemical reactions involved.

Prospective Demands for Rosin by the Paper Industry up to 1950

So far as existing evidence indicates, future requirements of rosin for the paper and paperboard industry will in all probability bear the same general relation to paper that has been shown in the last two decades. This has been shown in Fig. 1 as closely paralleling the total production of paper of all kinds in the United States from 1922 to 1937. Lacking any major amending considerations of an economic or technological character, and barring any modification of international trade policies, it is believed safe to predict the probable quantitative rosin requirement by basing it on the total estimated future consumption tonnages of the various grades of paper and their rosin content. These values should be somewhat more precise than the general relation previously developed, of the ratio of total paper production to barrels of rosin consumed.

Factors Affecting Paper Consumption

Any future estimated total consumption of paper is, of course, obtainable by multiplying the estimated average requirement of the individual citizen by the forecast national population. The consumption affords an index to past and future trends of paper consumption.

The population of the United States for specified years is given in Table II up to 1938, when it was estimated at 130,215,000. Future estimates[3] follow using a medium mortality and fertility and no-immigration hypothesis:

Year	Population
1940	131,993,000
1950	140,561,000
1960	146,987,000
1970	151,170,000
1980	153,022,000

Due to the past large increase in population, coupled with the general rise in the levels of literary and mechanical technology, the consumption of paper of various grades has consistently increased in a logarithmic fashion for many decades as shown from 1899 to date in Fig. 3. Estimates of the probable future consumption are also plotted using recent trends in per capita consumption for each grade and for forecasts in population for the totals up to 1950. The actual individual and total consumption tonnages of the six general groups of papers from 1810 to 1937 are given in Table II. The total per capita consumption, also given, shows a steady rise up to 1929, when a peak of 220 lb. was reached. During the economic depression this value has fluctuated considerably and its upward trend again started at 226 lb. per capita in 1936. This relation is shown graphically in Fig. 4 and is a direct reflection of the rising national educational level in

[3] From a report by National Resources Planning Board entitled "The Problems of a Changing Population," May, 1938.

TABLE VI.—PAPER[1] CONSUMPTION BY KINDS, PAST AND ESTIMATES FOR 1950
(Quantities in tons)

Kind of paper	1899	1909	1919	1929	1937	(1950)
Cultural						
Newsprint	569,000	1,159,000	1,892,000	3,813,000	4,261,000	4,700,000
Book	314,000	689,000	838,000	1,471,000	1,555,000	1,700,000
Fine	113,000	193,000	306,000	593,000	560,000	700,000
Total	996,000	2,041,000	3,036,000	5,877,000	6,376,000	7,100,000
Mechanical						
Wrapping	535,000	763,000	825,000	1,586,000	2,034,000	2,700,000
Paperboard	394,000	883,000	1,940,000	4,398,000	5,749,000	6,700,000
All other	233,000	537,000	692,000	1,490,000	1,709,000	2,100,000
Total	1,162,000	2,183,000	3,457,000	7,474,000	9,492,000	11,500,000
Total	2,158,000	4,224,000	6,493,000	13,351,000	15,868,000	18,600,000

[1] Includes all converted items.

TABLE VII.—PAST AND ESTIMATED FUTURE ROSIN REQUIREMENTS FOR THE PAPER INDUSTRY, 1922-1950

(This table presents the estimated consumption of rosin for specified years calculated from paper manufacturing data, and is used as a basis for predicting the probable rosin consumption in 1950)

Grades of paper	Average size used	Source of data	Annual production and consumption of papers and the calculated size requirements																Future rosin requirements			
			1922		1925		1927		1929		1930		1932		1934		1935		1936		1937		1950 [1]		1950 [2]	
			Paper 1,000 tons	Size Tons	Paper 1,000 tons	Size Tons	Paper 1,000 tons	Size Tons	Paper 1,000 tons	Size Tons	Paper 1,000 tons	Size Tons	Paper 1,000 tons	Size Tons	Paper 1,000 tons	Size Tons	Paper 1,000 tons	Size Tons	Paper 1,000 tons	Size Tons	Paper 1,000 tons	Size Tons	Paper 1,000 tons	Size Tons	Paper 1,000 tons	Size Tons
	%																									
Standard newsprint..	¼	Consumption [3]																								
		Reported	2451		3073		3492		3813		3496		2831		3176		3304		3671		4261					
		Calculated	2477	(6192)	2978	(7445)	3473	(8682)	3815	(9537)	3561	(8902)	2800	(7000)	3171	(7927)	3295	(8237)	3673	(9182)	4263	(10657)	.....	.....	4700	11750
		I.C.N.[4]	896		1315		1865		2327		2145		1647		2063		2186		2509		3023					
		I.E.[4]	133		133		122		96		134		144		147		197		243		294					
		Production [5]																								
		N.P.S.B.	1448	3620	1530	3825	1486	3715	1392	3480	1282	3205	1009	2522	961	2402	912	2280	921	2302	946	2365	900	2250	.....	.....
		B. of C.			1563		1516		1409		1226		1047		989		947		938		975					
Book	2	Consumption	968	19360	1365	27300	1265	25300	1471	29420	1370	27400	935	18700	1046	20920	1273	25460	1434	28680	1555	31100	1700	34000	1700	34000
		Production [6]			1343		1328		1497		1389		945		1055		1281		1438		1520					
Paperboard ..	½	Consumption	2154	10770	3290	16450	3737	18685	4398	21990	4014	20070	3297	16485	4033	20165	4652	23260	5414	27070	5749	28745	6700	33500	6700	33500
		Production [6]			3286		3773		4451		4060		3303		4073		4695		5454		5802					
Wrapping ...	2	Consumption	1059	21180	1287	25740	1515	30300	1586	31720	1556	31120	1234	24680	1329	26580	1616	32320	1874	37480	2034	40680	2700	54000	2700	54000
		Production [6]			1292		1525		1605		1580		1244		1356		1632		1879		2053					
Fine	3	Consumption	356	10680	472	14160	502	15060	593	17790	564	16920	418	12540	409	12270	495	14850	590	17700	560	16800	700	21000	700	21000
		Production [6]			473		508		607		574		424		417		507		602		578					
All others...	¼	Consumption	1015	2537	1103	2757	1404	3510	1490	3725	1251	3128	885	2212	1166	2915	1249	3122	1513	3782	1709	4272	2100	5250	2100	5250
		Production [6]			1225		1352		1571		1340		1034		1294		1414		1662		1907					
Total size—Tons.....				68147		90232		96570		108125		101843		77139		85252		101292		117014		123962		150000		159500
Estimated rosin required:																										
By content method (rosin[7] or dry size[8])																										
Tons				42251		63162		67599		75687		71290		53997		62234		73943		85420		90491		109500		116435
Barrels				201195		300771		321900		360414		339476		257128		296352		352109		406761		430909		522000		555000
By ratio method (using Tables I and IV)																										
Factors or future barrels				(43)		(29)		(34)		(29)		(30)		(31)		(27)		(29)		(29)		(38)		448000 [9]		.....
Actual rosin consumption:																										
Tons [10]				34094		65807		62459		81545		71679		54810		70770		75000		86263		71442		.....		.....
Barrels				162353		313365		297426		388310		341327		261000		337000		357143		410775		340200		.....		.....

[1] Predictions based on no change in the amount of newsprint made in the United States, the balance of requirement being imported.

[2] Predictions based on all the newsprint requirement being made in the United States.

[3] Consumption (calculated) obtained by adding imports and "N.P.S.B." production, neglecting exports. Source: News Print Service Bureau. These values do not exactly check "reported" consumption data obtained later from same source as under footnote 6. The values in parentheses are size requirements as stipulated under footnote 2.

[4] I.C.N. refers to imports from Canada and Newfoundland and I.E. refers to imports from European countries. Source: News Print Service Bureau.

[5] "N.P.S.B." production refers to production as indicated by News Print Service Bureau reports in Pacific Pulp and Paper Industry, May, 1939, page 36. These values do not check the actual reported production tonnages but are sufficiently close and are available for comparison for the full period. (See Table I.) "B. of C." production from Biennial Census of Manufactures, and Census of Forest Products, Bureau of the Census, U. S. Department of Commerce.

[6] The lack of complete "B. of C." production data from 1922 to 1933 made it necessary to use consumption data for the calculations. This substitution was permissible due to the small differences as shown where the production data are available for comparison. The small amount of imports and exports, except for newsprint, explains why these values are practically identical. Source: Agricultural Statistics, 1939, page 551, Table 684, for consumption, and Bureau of the Census for the production data.

[7] The rosin content of dry size averages about 94 per cent, the balance being combined and uncombined alkalies: the losses from barrel to size are about 6%, distributed as follows: 1.8% volatile matter, 1% lost on staves, 2% dirt, and a saponification loss of 0.5%. Consequently, it requires 1 lb. of barrel rosin to make 1 lb. of dry size.

[8] The dry size equivalent of thick rosin soap: 1922-24, 62%; 1925-32, 70%; and 1933-37, 73%. Estimated by Paper Makers Chemical Company, Kalamazoo, Michigan.

[9] Using an average value of 33 based on those of 1935 to 1938.

[10] Based on 420-lb. barrels, reported in Gamble's International Naval Stores Year Book for 1939-40, page 83, as obtained from the Bureau of Chemistry and Soils, U. S. Department of Agriculture.

recent decades and the large increase in the use of paper for mechanical purposes. In Table VI are given the past and future estimated consumptions of paper for the two major purposes, mechanical and cultural. The recent fluctuations in the per capita consumption (Fig. 3) are probably largely due to changes in demand for paper for mechanical purposes although certain cultural grades have recently shown losses in consumption probably due to competitive radio broadcast advertising.

Due to the markedly apparent lowering of the population growth rate, the increase in total consumption of paper, and consequently for rosin, however, will probably be at a somewhat lower rate in the immediate future. The change in population growth rate for the present is an accepted fact, and barring major disturbances in our national life, this lower rate probably will continue.

Future Rosin Contents of Paper

There is no evidence of any decrease in the percentage of rosin sizing that will be used in the various grades of paper in the next few decades due to the unique economic and technical place rosin holds in the sizing of paper and to the lack of suitable

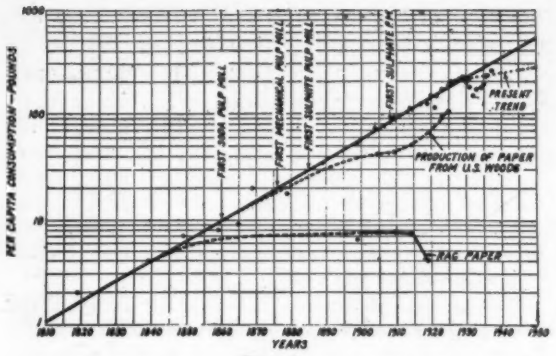

Fig. 4.

Total Per Capita Consumption of Paper and Paperboards. 1810 to 1937.

substitutes. There are many new sizing agents but they are generally used in addition to rosin size and not as substitutes.

Consequently, any change in the composition of papers will, if they occur, be toward the use of more rosin. This advantage cannot be realized, however, unless and until a drop in the price of rosin encourages its freer use in cheap papers and the possible

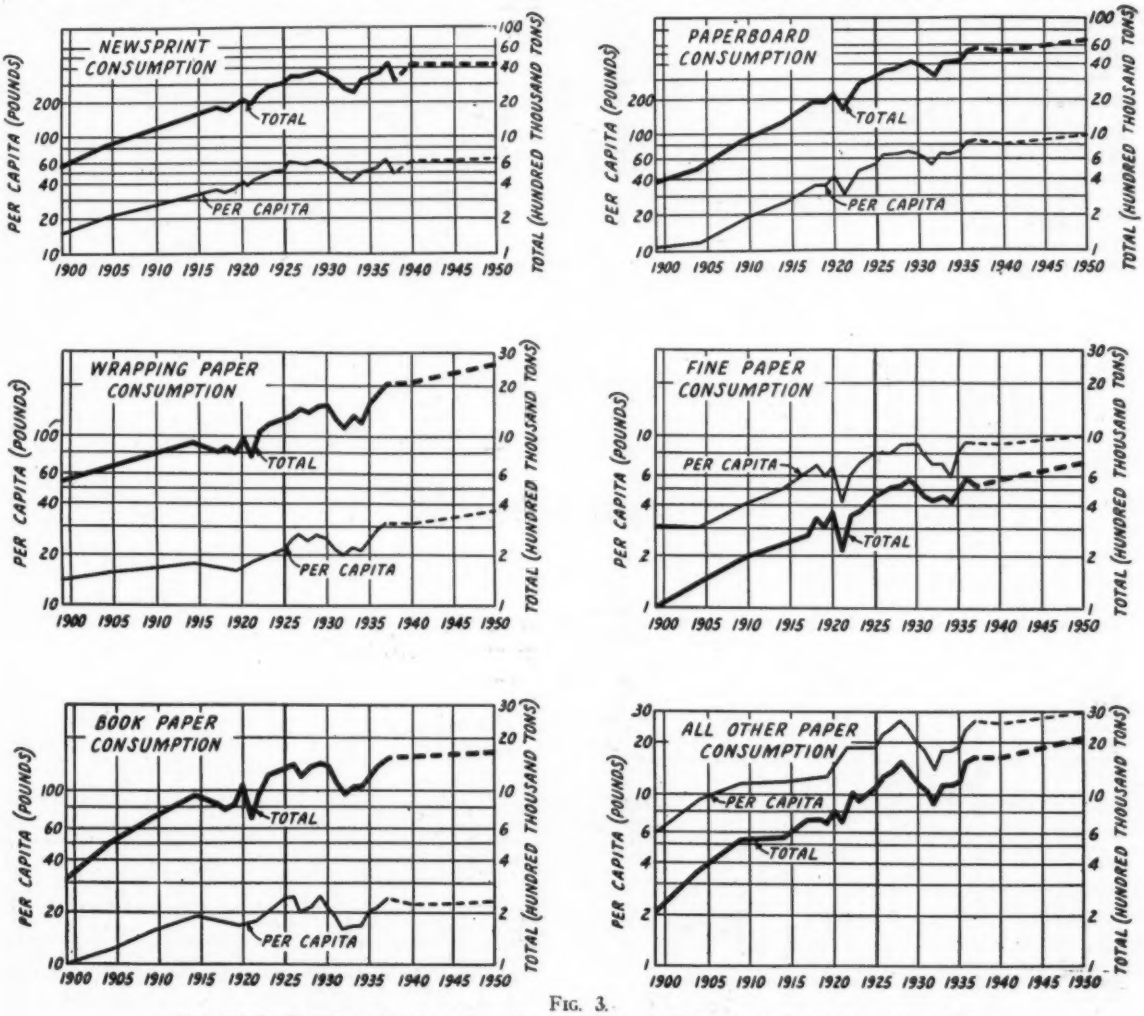

Fig. 3.

Past and Possible Future Trends of Paper Consumption in the United States by Kinds. 1899 to 1950.

recapture of the newsprint field with its large tonnage of relatively unsized paper.

Determination of Future Rosin Requirements

One way of roughly estimating the probable future rosin requirement is the ratio method previously indicated. If the recent ratio of 1 barrel of rosin consumed for about every 33 tons of paper manufactured, is applied to the projected paper consumption tonnages for 1950 given in Table VI, a total rosin requirement for all grades of about 448,000 barrels would be indicated.

As a statistical basis for estimating the probable future consumption and production of the various grades of paper, it was necessary to determine the past trends in per capita consumption, shown in Table II and Fig. 3, and modify these values in accordance with the factors previously indicated. Selecting the trends in per capita consumption from 1925 to 1938 as indicative of the immediate future produced the curves in Fig. 3 and permitted, when applied to the future population estimates, the calculation of the paper consumption tonnages shown in Tables VI and VII.

A More Precise Method

A much more precise method of determining quantitatively the future requirements of rosin for each and all grades is available. It is based on the average rosin size content of the grade groups of papers and their estimated production tonnages. The assumption is that the amount of rosin reported consumped by the paper industry for any one year and the amount required to size all grades of papers for that year as calculated from size contents and production tonnages should check within reasonable limits. The rosin consumption has been reported in Table IV and the production tonnages and average size contents of the six grade groups have been given in Tables I and III, respectively.

In order to show the accuracy of this method, the data covering the years 1922, 1925, 1927, 1929, 1930, 1932, and 1934 to 1937 were analyzed and compared in Table VII. Also future rosin requirements were calculated on the basis of the demonstrated relations shown.

An Illustration

As an illustration of the derivation of the future rosin requirement for 1950, the calculations for the year 1930 follow. At the left, under "grades of paper" are found the six grade groups; next, under "average size used" are the usual amounts of rosin size applied to each of the six different grades, running from ¼ to 3 per cent by weight; then, under "source of data" are given origins with reference numbers to footnotes; below "estimated rosin required" are the two calculated equivalents (tons and barrels) of the total rosin size used in all six grades, and, under "actual rosin consumption" are given the values from Table IV of rosin actually consumed for that year. Under the left column for 1930, entitled "paper" are the consumption and production values for each of the six grades in thousands of tons. Opposite each in the next column entitled "size" are the calculated tons of "thick" size used for these grades based on the percentages given under the column, entitled "average size used." The total of each "size" column is given, and in 1930 was 101,843 tons. Converting this value to dry size or rosin by multiplying by 70 per cent, as indicated in the footnote, gave a rosin value of 71,290 tons. The actual rosin consumption for 1930 was 71,679 tons or 341,327 barrels.

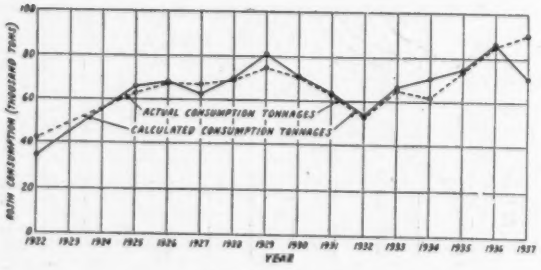

Fig. 5.
Comparison of Calculated and Actual Rosin Consumption by the Paper Industry. 1922 to 1937.

Values Are Remarkably Close

These values are remarkably close and cannot be considered as selected or accidental inasmuch as similar data taken for 1926, 1928, 1931, 1932, 1935, and 1936 are equally close in checking the actual rosin consumed. The values for 1925, 1927, 1929, and 1933 check within 8 per cent and only the values for 1922 and 1937 are in wide divergence. Probably the results of the economic depression of 1921 are reflected in the abnormally low tonnages of rosin consumed in 1922.

The general relation between the calculated and actual rosin consumption from 1922 to 1937 is shown in Fig. 5.

Accepting this method, and using the tonnage of paper given under each grade for 1950 in Table VII as the probable amount that will be manufactured, the calculations indicate that there will be required about 109,500 tons or 522,000 barrels of rosin to meet the demands of the paper industry as it is now operated.

Additional Possible Consideration

An additional possible consideration would be the rosin requirements in case the United States produced its entire newsprint consumption. These values are given in line 2 of Table VII after "consumption, calculated" for each year under "size" in parentheses, and are calculated from the gain in production that would be required over the normal United States production values. Should this occur, the total rosin required for all grades for 1950 would be about 116,435 tons or 555,000 barrels.

Conclusions

The technical use of rosin as a papermaking material has been described and the following conclusions drawn:

(1) It is an eminently satisfactory product for the "waterproofing" of paper and paperboard.

(2) There are no substitutes for rosin or technical developments that would indicate the availability of such a cheap organic acid from other sources in the immediate future.

(3) The chemistry of the sizing reaction needs further scientific study.

(4) The use of rosin in relation to certain use requirements of various grades of papers has been evaluated.

(5) Rosin quality except color, has been shown to be of minor importance to the paper industry due to the small amount used in paper.

(6) For each barrel of rosin consumed by the paper industry, about 30 tons of paper are produced.

(7) The use of rosin should expand with new paper products due to its cheapness and physical and chemical properties.

Imports of Paper and Paper Making Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

Effective September 30, 1939, under Treasury Decision 49,970, all publications, exchanges and trade associations, were denied access to import manifests at the New York Customs House. The Paper Trade Journal and other interested parties have vigorously protested this ruling, and as soon as the order of the Treasury Department is modified or rescinded, full publication of all manifests will be resumed in these columns. In the interim, the Paper Trade Journal is making every possible effort to gather all available information from manifests, at various outside sources.

NEW YORK IMPORTS

WEEK ENDING JUNE 29, 1940

SUMMARY

Newsprint .....6,749 rolls
Miscellaneous paper.....1 cs.

NEWSPRINT

International Paper Co., ——, Gatineau, 285 rolls.
——, ——, Comeau Bay, 6,148 rolls.
H. G. Craig Co., Inc., ——, Donnacona, 316 rolls.

MISCELLANEOUS PAPER

National City Bank, ——, Yokohama, 1 cs. paper.

RAGS, BAGGINGS, ETC.

National City Bank, *Mormaclark,* Buenos Aires, 31 bls. rags.
——, *Argentina,* Buenos Aires, 8 bls. new rags.
E. J. Keller Co., Inc., *Exochorda,* Alexandria, 66 bls. colored cotton rags.

CASEIN

American British Chemical Supplies, *Mormaclark,* Buenos Aires, 3,000 bags, 150,000 kilos.
Pacific National Bank, *Mormaclark,* Buenos Aires, 1,667 bags, 100,020 kilos.
A. Hurst & Co., *Mormaclark,* Buenos Aires, 417 bags, 25,020 kilos.
American Cyanamid & Chemical Corp., *Argentina,* Buenos Aires, 1,917 bags.
A. Hurst & Co., *Argentina,* Buenos Aires, 1,000 bags.
American British Chemical Supplies, *Argentina,* Buenos Aires, 2,217 bags.
T. M. Duche & Sons, *Argentina,* Buenos Aires, 417 bags.

PHILADELPHIA IMPORTS

WEEK ENDING JUNE 29, 1940

American Cyanamid & Chemical Corp., *Mormacpenn,* Buenos Aires, 834 bags casein, 50,040 kilos.

BALTIMORE IMPORTS

WEEK ENDING JUNE 29, 1940

American Cyanamid & Chemical Corp., *Mormaclark,* Buenos Aires, 3,334 bags casein, 200,040 kilos.

LOS ANGELES IMPORTS

WEEK ENDING JUNE 29, 1940

——, *Rosebank,* Powell River, 2,013 pkgs newsprint.
——, *Kinai Maru,* Yokohama, 1 cs. 2 pkgs. paper.

New Literature

Four new bulletins have been issued by The Bristol Company, Waterbury, Conn. Bulletin 524, describes industrial glass stem thermometers and gives sizes, ranges, etc. Bulletin 543, covers Bristol's recording voltmeters and ammeters. Bulletin 548, includes a complete line of modern thermometer and purometer controllers for gas, electric and oil fired furnaces, etc. In Bulletin 555, the Bristol portable recording voltmeters and ammeters are described, including two and three-pen instruments for recording more than one reading on one chart.

Variable speed transmission control is covered in a bulletin issued by the Ideal Commutator Dresser Company, 1257 Park avenue, Sycamore, Ill. It describes the Ideal Select-O-Speed variable speed transmission, with level, hand wheel and the new electric motorized control. Other folders describe the company's Thermo-grip soldering tools and other small tools for industrial plants.

Box car loaders and pilers are covered in Bulletin 240, issued by the Stephens-Adamson Manufacturing Company, Aurora, Ill. This equipment is adapted for loading and piling practically any loose bulk material.

Mechanical rubber goods are described in a 24-page condensed catalogue issued by The B. F. Goodrich Company, Akron, Ohio. The publication gives engineering data and information to facilitate selection of various products. The company's cord conveyor belt and data on elevator belt problems are discussed. The many types of hose and fittings for all types of services, packings, linings and many other rubber products are included.

Air shut-off valves are described in a leaflet issued by the Homestead Valve Manufacturing Company, Coraopolis, Pa. The Homestead-Ross valves described are useful for quick operating services on air, gas, and cold water lines, in sizes from ½ inch to ¾ inch.

A folder entitled "Eminent engineering" issued by Continental Machines, Inc., 1301 Washington avenue south, Minneapolis, Minn., describes the several points in the construction of the company's Doall contour sawing machines, equipped with screw feed, power feed and with contours mechanically operated.

Induction motors are described in Leaflet F8537, issued by the Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa. It describes the construction and mounting details of the company's Type FS polyphase squirrel cage induction motors, designed for constant speed applications, available from 1/6 to ¾ horse power.

Colors for unbleached kraft pulp are described in Circular No. 311-D just issued by the Geigy Company, 89-91 Barclay street, New York. Dyeings are shown in 36 colors on northern and southern kraft pulps.

"Alkalies and chlorine in the treatment of municipal and industrial water", is the title of Bulletin No. 8 issued by the Solvay Sales Corporation, 40 Rector street, New York. The 84-page publication discusses in detail the analysis of various techniques used in treating water supplies with charts, tables, and other data.

Porter Farwell Passes Away

TURNERS FALLS, Mass., June 27, 1940—Porter Farwell, aged 92, a long time resident of this town and one of the country's best-known paper makers, died Wednesday evening at his home, 22 High Street.

Mr. Farwell came here 68 years ago and started work in the Montague Mill with his brother-in-law, the late George Marshall. He was born in Ischua, N. Y., May 8, 1848, the son of John Hubbard and Catherine Putnam Farwell. On September 15, 1874, he married Alice Burlinghame in Franklinville, N. Y. Mrs. Farwell died several years ago.

Mr. Farwell was superintendent of the Montague Paper Company and when that concern was merged with the International Paper Company he continued as superintendent until 1908. He was also much interested in the Ryegate Paper Company of Ryegate, Vt. During his association with the paper industry his name became synonymous with high grade newsprint paper, the Montague Mill, it is said, turning out a product which was unequaled in quality anywhere in America.

Although actively interested in civic affairs his only public service was as a member of the School Board, of which he served as chairman for several years.

Union Bag Changes

SAVANNAH, Ga., July 1, 1940—Two additional changes in the executive personnel of the Union Bag and Paper Corporation's Savannah plant were announced last week by T. T. Dunn, general superintendent.

F. W. Kelly, assistant office manager, has been promoted to the position of assistant general superintendent; and B. W. Martin has been named chief chemist, succeeding O. W. A. Rodowski.

Mr. Kelly has been connected with the Savannah plant for the past four years, coming here from the Union Bag's plant in Kaukauna, Wis.

Mr. Martin came to the Savannah plant four months ago from Bogalusa, La., where he was affiliated with the Gaylord Container Corporation.

Goes with Crown Zellerbach

SEATTLE, Wash., July 1, 1940—Axel J. F. Brandstrom, senior economist for the United States Forest Service at Portland, Ore., has resigned to take over new duties as forester for the timber department of the Crown Zellerbach Corporation, D. S. Denman, vice president, announced here.

Mr. Brandstrom duties will be to manage all the firm's timber properties on a sustained yield basis. He will take over the position later this summer with headquarters in Portland. He is a 1919 graduate of the University of Washington.

Japan Postpones Waste Paper Rule

WASHINGTON, D. C., July 1—Japanese Ministry of Commerce and Industry has been postponing enforcement of Articles 2, 5, 7 and 8 of the "Waste Paper Distribution Regulations", promulgated in the "Official Gazette". The ministry made public a notice in the "Official Gazette" to the effect that the above mentioned articles would be enforced commencing April 1. These articles provide for the adoption of a licensing system for sales, purchases and distribution of waste paper.

Italy Starts New Pulp Mills

WASHINGTON, D. C., June 26, 1940—Italian annual requirement of long fiber chemical pulp for paper manufacture has been estimated at 140,000 metric tons during the recent meeting of the Corporation of Paper and Printing Industries, according to a report from the office of the American Commercial Attache, Rome. The present autarchic program calls for production of 70,000 tons, that is 50 per cent of requirements, by the end of 1940.

In connection with this program, it is pointed out that during the early part of 1939 the construction of 4 large plants was authorized. Of these plants, the one at Chieti is already in operation, that at Cuneo will begin operations at the latest in June, the Finale di Reno plant in the fall of this year, and the Capua plant during the early part of 1941. It is expected that the production of these 4 new units, added to that of the old ones, will exceed the autarchic goal.

During the first 7 months of 1939, Italy imported a total of 68,949 metric tons of cellulose destined for purposes other than the manufacture of artificial textile fibers. At the same rate, the 1939 annual imports would amount to about 118,200 metric tons.

The reported production of cellulose during the first 6 months of 1939 amounted to 25,238 tons. Breakdowns indicating type of production are not available. However, it is believed that of the total domestic cellulose production less than ⅓ (about 15,000 tons) is used for paper manufacture.

Japan Exports More Cellophane

WASHINGTON, D. C., June 18, 1940—Japan's position as an exporter of cellophane assumed considerable importance in 1939, shipments setting a new all-time record and exceeding those of 1938 by fully 135.4 per cent. Compared with the previous peak exports of 1936, there was a gain of almost 30 per cent.

The decided expansion in exports in 1939 is significant since it was made in the face of domestic restrictions over consumption of materials, increased production costs and other unfavorable conditions brought about by rigid wartime economy. The expansion was caused primarily by heavier shipments to the yen-bloc areas of "Manchukuo", Kwantung Province and those parts of China under Japanese domination, but exports to other areas likewise increased, unofficial data covering exports during the first 9 months of the year indicate.

Hon. Alfred Raper Made Director

Bowmall & Co., Inc., announce that according to a cable received from their London office, June 26, 1940, the Honorable Alfred Baldwin Raper, former Member of Parliament and widely known in the pulp and paper trade, would become a member of the board of directors of their affiliated organization in England, the Anglo American Pulp and Paper Company, Ltd., on June 27.

East Coast Paper Products Formed

The East Coast Paper Products Corporation, 201-37th street, Brooklyn, N. Y., is a new firm which has been formed to manufacture gummed sealing tape, waxed papers, garment bags, pleating tissue, adding machine rolls, luggage papers and other paper specialties. The firm is headed by men of long experience in this industry.

New York Paper and Pulp Market Review

Paper Mill Production Continues To Rise With Manufacturers Anxious About Future Pulp Supply and Uncertainty of Resumption of Scandinavian Shipments—Rag Market Quiet—Waste Paper Prices Hold Firm.

Office of the PAPER TRADE JOURNAL,
Wednesday, July 3, 1940.

Dollar sales in the wholesale paper trade continues to indicate business is being maintained at a high level, according to reports received from many manufacturers' representatives, jobbers, and general paper merchants during the current week.

The index of general business activity rose to 102.8 per cent for the week ended June 22, from 102.4 per cent for the preceding week, compared with 91.1 per cent for the corresponding week last year.

Paper production for the week ended June 22 was estimated at 96.1 per cent, compared with 94.5 per cent for the previous week and compared with 75.2 per cent for 1939, with 67.7 per cent for 1938, with 84.7 per cent for 1937 and with 79.4 per cent for the corresponding week in 1936.

Paper board production for the week ended June 22 was 79.0 per cent, compared with 66.0 per cent for 1939, with 59.0 per cent for 1938, with 79.0 per cent for 1937 and with 71.0 per cent for the like week in 1936.

Dollar sales of 2,871 wholesale concerns throughout the country, as reported by the National Association of Credit Men and the Bureau of the Census, were 3.8 per cent higher in May; writing paper, 16.4 per cent higher, wax paper, 15.4 per cent higher and paper boxes and other paper products 24.7 per cent higher than for the same month last year.

Moderate increases in contract quotations on many grades of paper, ranging from $3 per ton on uncoated book paper up to $10 per ton on offset and some other grades, went into effect on July 1, for the third quarter. Reports indicate that higher prices are quoted on spot business, but the upward revision in paper prices has been moderate and in some quarters of the trade the current price level is viewed as rather low. Consumer demand continues at a high level, although trade reports indicate that a considerable part of buying is for inventory account. All grades of paper are in active demand, with prices firm, with demand from the printing trades continuing to lag behind expectations.

Mechanical Pulp

The mechanical pulp market is firm and production continues at a high level. Domestic production for April, 1940, totaled 110,483 tons, compared with 98,372 tons for the preceding month. Prices on domestic and Canadian mechanical pulp for the third quarter, now in effect, range at from $40 to $45 per ton

Chemical Pulp

No important change in the market situation in chemical pulp has been reported this week. No favorable reports on the Scandinavian pulp situation have been received. Contract prices for the third quarter became effective July 1. Standard brands of domestic and Canadian bleached sulphite pulp are currently quoted at from $75 to $80 per ton; easy bleaching sulphite at from $63.50 to $75 per ton, and strong unbleached sulphite at from $63.50 to $75 per ton. Bleached kraft pulp is currently quoted at from $80 to $90 per ton; light and strong kraft at from $70 to $75 per ton and No. 1 kraft pulp at from $65 to $72 per ton.

Rags

Trading in the domestic rag market has been moderate for the week. No important change from prevailing market quotations on any grade of new and old rags has been reported this week.

Old Rope and Bagging

Prices on old rope are firm and mill buying is reported continuing in the same cautious manner which has prevailed for so long in this market. Prices remain unchanged.

The old bagging market continues quiet. No important change in prices or demand has been reported during the current week.

Old Waste Paper

The old waste paper market continues active, with prices firm under a good, steady demand. No. 1 mixed paper is reported in particularly good demand and other of the lower grades are relatively strong, while the higher grades of paper stock are rather weak at this date. Prices on all grades remain unchanged.

Twine

Prices on all grades of hard and soft fiber twines remain firm and conform to prevailing market quotations. No important change in the market situation has been reported at this date.

Industrial Tape Corp. Builds

The Industrial Tape Corporation, a unit of Johnson & Johnson, has broken ground at New Brunswick, N. J., for a new building, which is to be completed by October 15, and which will cover 40,000 square feet of floor space.

The site selected is 100 feet northwest of the Raritan River Railroad, with the front of the building about 250 feet west of Route 25. The plant, of modern design, will house manufacturing, laboratory and office facilities of the corporation.

The products of the Industrial Tape Corporation include a wide range of paper, foil, cloth and other pressure-sensitive adhesive tapes used in the automobile and other industries. Other items include cellophane tape, used as a package sealing in drug and other retail stores, and is increasingly popular for a variety of household purposes.

The corporation now manufactures its products in this city. One hundred persons will be given employment at the plant when put in operation in October.

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, July 3, 1940.

BLANC FIXE—Quotations on blanc fixe are firm and conform to prevailing market levels. The pulp is currently quoted at $35 per ton, in barrels, at works; the powder is quoted at $50 per ton, f.o.b., works.

BLEACHING POWDER—Prices on bleaching powder are firm. Demand reported fair to moderate for the week. Bleaching powder is currently quoted at $2 per 100 pounds, in drums, at works.

CASEIN—Quotations on casein are unchanged for the week. Standard domestic casein, 20-30 mesh, is currently quoted at from 13 to 14 cents per pound; 80-100 mesh, at from 13½ to 14 cents per pound; all prices in bags, car lots. Argentina casein is currently quoted at 12 cents per pound. The current quotation of 15 cents per pound on French casein is nominal.

CAUSTIC SODA—Prices on caustic soda are firm and continue unchanged at prevailing market quotations. Demand continues moderate. Solid caustic soda is currently quoted at $2.30 per 100 pounds; flake and ground at $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Quotations on china clay are firm and continue unchanged at prevailing market levels. Domestic filler clay is currently quoted at from $7 to $15 per ton; coating clay at from $11 to $22 per ton, at mines. Imported clay is currently quoted at from $13 to $25 per long ton, ship side.

CHLORINE—Prices on chlorine are firm. Shipments steady. Prices unchanged. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is fairly firm for the week with prices lower. "G" gum rosin is currently quoted at $3.75 per 280 pounds, gross weight, in barrels, Savannah. "FF" wood rosin is currently quoted at $3.75 per 280 pounds, gross weight, in barrels, New York. Seventy per cent gum rosin size is currently quoted at $2.42 per 100 pounds, f.o.b., shipping point.

SALT CAKE—Quotations on salt cake are firm and nominal. Demand continues good. Domestic salt cake is currently quoted at $17 per ton, in bulk; chrome salt cake at $16 per ton; all prices in car lots, f.o.b., shipping point. Imported salt cake, quoted at $20 per ton, is nominal.

SODA ASH—Prices on soda ash are firm and continue unchanged at prevailing market levels. Demand reported moderate. Prices on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Quotations on corn starch are firm and unchanged. Pearl is currently quoted at $2.80 per 100 pounds; powdered starch at $2.90 per 100 pounds; all prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Prices on sulphate of alumina are firm, with shipments steady on contracts. The commercial grades are currently quoted at $1.15; iron free at $1.60 per 100 pounds; all prices in bags, car lots, f.o.b., works.

SULPHUR—Quotations on sulphur are firm and unchanged at prevailing market levels. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $19 per ton.

TALC—Prices on talc are firm and conform to prevailing market quotations. Domestic talc is currently quoted at from $15 to $21 per ton, at mines. Prices on imported talc are nominal.

MARKET QUOTATIONS

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	"	—
Kraft—per cwt.—Delivered Zone A			
Northern, Extra Quality	$5.25	@	$5.75
Superstandard	4.87½	"	5.25
Northern Standard Wrapping	4.37½	"	4.62½
Standard Wrapping	4.25	"	—
Tissues—Per Ream—Carlots			
White No. 1	.97½	"	—
White No. 1 M. G.	.95	"	—
White No. 1½	.80	"	—
White No. 2	.75	"	—
Anti-Tarnish M. G.	.80	"	—
Colored	.85	"	—
Kraft	.87½	"	—
Manila	.77½	"	—
Unbl. Toilet, 1 M.	3.75	"	—
Bleached Toilet	5.26	"	—
Paper Towels, Per Case—			
Unbleached, Jr.	2.10	"	—
Bleached, Jr.	3.60	"	—
Manila—per cwt.—C. l. l. a.			
No. 1 Jute	8.25	@	10.25
No. 1 Manila Wrapping, 35 lb.	5.25	"	—
No. 2 Manila Wrapping, 35 lb.	5.00	"	—
Boards, per ton—			
News	35.00	@	40.00
Chip	35.00	"	40.00
Sgl. Mla. L.L. Chip	55.00	"	57.00
White Pat. Coated	67.00	"	70.00
Kraft Liners	55.00	"	—
Binders Boards	73.00	"	80.00

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1	$39.10 @	$46.00	$40.25 @	$47.25
100% Rag	31.05 "	36.50	32.20 "	37.75
85% Rag	.... "	....	29.90 "	35.00
75% Rag	23.60 "	27.75	24.75 "	29.00
65% Rag	.... "	....	21.65 "	26.25
50% Rag	17.55 "	21.50	18.70 "	22.75
25% Rag	14.65 "	17.75	15.80 "	19.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
No. 1	$8.95 @	$11.00	$10.10 @	$12.25
No. 2	8.05 "	9.75	9.25 "	11.25
No. 3	7.60 "	9.25	8.50 "	10.75
No. 4	7.30 "	9.00	8.50 "	10.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper, Delivered in Zone 1:

No. 1 Glossy Coated	$11.90	@	$13.50
No. 2 Glossy Coated	10.35	"	11.75
No. 3 Glossy Coated	9.55	"	11.00
No. 4 Glossy Coated	9.15	"	10.50
No. 1 Antique (watermarked)	8.35	"	9.50
No. 2 Offset	7.70	"	9.00
A Grade E. F.	7.50	"	8.75
A Grade S. & S. C.	7.75	"	9.00
B Grade E. F.	6.95	"	8.00
B Grade S. & S. C.	7.20	"	8.25
C Grade E. F.	6.65	"	7.75
C Grade S. & S. C.	6.90	"	8.00
D Grade E. F.	6.40	"	7.50
D Grade S. & S. C.	6.65	"	7.75

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	Nominal		
Dry	Nominal		
(Delivered)			
No. 1 Domestic and Canadian	40.00	@	45.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	3.72½	@	4.50
Prime Qualities—			
Easy-Bleaching Sulphite	3.17½	"	3.75
Strong Unbleached Sulphite	3.17½	"	3.75
(On Dock, Atlantic Ports)			
Kraft Bleached	4.00	"	4.50
Kraft Light & Strong	3.50	"	3.75
Kraft No. 1	3.25	"	3.60
(F. o. b. Pulp Mill)			
Kraft Domestic and Canadian	3.25	"	3.60
(Delivered)			
Soda Bleached	2.90	"	3.30

Add 60 cents per short ton, dock charges for Albanay; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N Y.

Shirt Cuttings—			
New White, No. 1	7.00	@	7.25
Silesias No. 1	4.60	"	4.75
New Unbleached	6.75	"	7.00
Blue Overall	4.50	"	4.75
Fancy	3.25	"	3.50
Washables	2.00	"	2.1:
Mixed Khaki Cuttings	2.75	"	3.0(
O. D. Khaki Cuttings	3.15	"	3.3[illegible]

Old Rags

White, No. 1—			
Repacked	3.25	"	3.50
Miscellaneous	2.75	"	3.00
White, No. 2—			
Repacked	2.50	"	2.75
Miscellaneous	2.00	"	2.25
Thirds and Blues—			
Repacked	2.00	"	2.25
Miscellaneous	1.75	"	1.90
Roofing Rags—			
No. 1	1.10	"	1.15
No. 2	.85	"	.90
No. 3 (bagging)	.90	"	1.00
No. 4	.60	"	.65
No. 5A	.60	"	.65

Foreign Rags

All prices nominal

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	"	2.20
New Light Silesias	5.50	"	5.75
Light Flannelettes	5.50	"	5.75
New White Cuttings	7.00	"	7.50
New Light Oxford	4.00	"	4.50
New Light Prints	3.00	"	3.25

Old Rags

No. 1 White Linens	7.50	"	8.50
No. 2 White Linens	6.50	"	7.50
No. 3 White Linens	4.50	"	—

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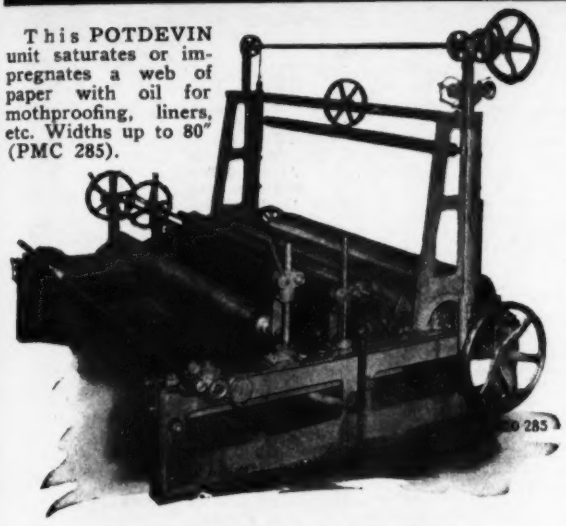

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No. 4 White Linens	2.25	@	3.25
No. 1 White Cotton	4.25	"	4.75
No. 2 White Cotton	3.25	"	3.75
No. 3 White Cotton	2.50	"	3.00
No. 4 White Cotton	1.90	"	2.20
Extra Light Prints	2.00	"	2.40
Ord. Light Prints	1.75	"	2.15
Med. Light Prints	1.55	"	1.95
Dutch Blue Cottons	2.25	"	2.50
French Blue Linens	3.00	"	—
Checks and Blues	2.00	"	—
Linsey Garments	1.90	"	2.00
Dark Cottons	1.50	"	1.60
Old Shopperies	1.30	"	1.45
New Shopperies	1.45	"	1.50
French Blues	2.25	"	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	2.75	@	3.00
Domestic	2.50	"	2.75
Wool Tares, light	2.00	"	2.25
Wool Tares, heavy	2.12½	"	2.25
Bright Bagging	2.25	"	2.50
Manila Rope—			
Foreign	4.25	"	4.50
Domestic	3.75	"	4.00
Jute Threads	2.62½	"	2.75
Sisal Strings	2.10	"	2.35
Mixed Strings	1.10	"	1.20

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	3.10	@	3.25
Ordinary Hard White No. 1	2.25	@	2.50
Soft White No. 1	1.80	"	1.90
Soft White Extra	2.50	"	2.60
Flat Stock—			
Stitchless	1.10	"	1.25
Overissue Mag	1.00	"	1.10
Solid Flat Book	1.25	"	1.30
Crumbled No. 1	.70	"	.75
Ledger White Stock	2.15	"	2.25
Ledger Stock Colored	1.65	"	1.70
Manila—			
New Env. Cut	1.70	"	1.80
New Cuttings	1.30	"	1.40
Old Kraft Machine Compressed bales	1.75	"	1.85
News—			
No. 1 White News	1.75	"	1.90
Strictly Overissue	.70	"	.75
Strictly Folded	.60	"	.65
Corrugated	.72	"	.77½
No. 1 Mixed Paper	.47½	"	.52½

Twines

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.19½	@	—
White Hemp	.19½	"	—
Fine Polished—			
Fine India	.24	"	—
Unpolished—			
Box	.15	"	—
Paper Makers	.15¾	"	—
Tube Rope	.17	"	—
Wall Paper	.16	"	—
Wrapping	.18¾	"	—
Soft Fiber Rope	.16¾	"	—
Cotton	.21½	"	—

(Hard Fiber)

Medium Java	.20	"	—
Mex. Sisal	.17	"	—
Manila	.24¾	"	—

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f.o.b. Phila.)

Shirt Cuttings—			
New White No. 1	.07¼	@	.07½
New White No. 2	.04	"	.04½
Light Silesias	—	"	.04½
Silesias, No. 1	—	"	.04½
Black Silesias, soft	—	"	.03¾
New Unbleached	.05½	"	.06
Washable, No. 1	—	"	.04
Blue Overall	.04½	"	.05
Cottons—According to grades—			
Washable No. 2	—	"	.01¾
New Blue	—	"	.01¾
Fancy Percales	—	"	.03
New Black Soft	—	"	.04
New Light Seconds	.04½	"	.05
New Dark Seconds	—	"	1.55
Khaki Cuttings—			
No. 1 O. D.	.03½	"	.03¾
No. 2 Mixed	.02½	"	.02¾
Corduroy	—	"	.03
New Canvas	.05½	"	.06
New Black Mixed	—	"	.03

Domestic Rags (Old)

White No. 1—			
Repacked	3.25	@	3.75
Miscellaneous	2.50	"	2.75
Thirds and Blues—			
Miscellaneous	1.55	"	1.65
Repacked	1.75	"	2.00
Black Stockings (Export)	3.50	"	4.00
Roofing Stock—			
Foreign No. 1	Nominal		
Domestic No. 1	—	"	.90
Domestic No. 2	—	"	.80
Roofing Bagging	—	"	.70

Bagging

(f.o.b. Phila.)

Gunny, No. 1—			
Foreign	Nominal		
Domestic	2.25	@	2.75
Manila Rope	—	"	4.50
Sisal Rope	1.75	"	2.00
Mixed Rope	.75	"	1.00
Scrap—			
No. 1	2.50	"	2.75
No. 2	1.10	"	1.15
Wool Tares, heavy	3.50	"	3.70
No. 1 New Light Burlap	3.00	"	3.50
New Burlap Cuttings	2.00	"	2.25

Old Papers

(f.o.b. Phila.)

Shavings—			
No. 1 Hard White	2.50	@	2.55
No. 2 Hard White	2.10	"	2.15
No. 1 Soft White	2.00	"	2.10
No. 2 Soft White	1.60	"	1.75
No. 1 Mixed	.90	"	1.00
Solid Ledger Stock	1.75	"	1.80
Ledger Stock, white	1.90	"	2.00
Ledger Stock, colored	1.40	"	1.45
No. 1 Books, heavy	1.10	"	1.15
Manila Cuttings	1.90	"	1.95
Print Manila	.65	"	.70
Container Manila	.55	"	.60
Kraft Paper	1.70	"	1.75
No. 1 Mixed Paper	.40	"	.45
Straw Board Chip	.40	"	.45
Binders Board Chip	.40	"	.45
Corrugated Board	.70	"	.75
Overissue News	.75	"	.80
Old Newspapers	.55	"	.60

BOSTON

Old Papers

(f.o.b. Boston)

Shavings—			
No. 1 Hard White	2.75	@	3.15
No. 1 Soft White	2.00	"	2.25
No. 2 Mixed	.75	"	.80
Solid Ledger Books	1.50	"	1.75
Overissue Ledger Stock	1.75	"	2.00
Mixed Ledgers	.85	"	.90
No. 1 Books, heavy	1.00	"	1.10
No. 1 Books, light	.65	"	.75
Crumpled Stitchless Book Stock	.55	"	.60
Manila Env. Cuttings	1.85	"	2.00
Manila Envelope Cuttings extra quality	2.35	"	2.60
White Blank News	1.40	@	1.50
No. 1 Kraft	1.40	@	1.50
Extra No. 1 Kraft	1.60	"	1.90
Mixed Papers	.45	"	.50
Print Manila	.50	"	.55
Container Manila	.60	"	.70
Old Newspapers	.50	"	.55
Paper Wool Strings	.90	"	1.10
Overissue News	1.00	"	1.10
Box Board Chips	.40	"	.45
Corrugated Boxes	.50	"	.65
Kraft corrugated boxes	1.20	"	1.40
New Kraft Cuttings	2.00	"	2.25
Screening Wrappers	.60	"	.70

Bagging

(f.o.b. Boston)

Gunny Bagging—			
Foreign	(nominal)		
Domestic	2.25	"	2.50
Sisal Rope	2.25	"	2.50
Mixed Rope	.85	"	1.00
Transmission Rope—			
Foreign	3.50	"	3.75
Domestic	2.50	"	3.00
Soft Jute Rope	3.00	"	3.25
Manila Rope—			
Foreign	4.85	"	5.10
Jute Carpet Threads	1.50	"	1.75
Gunny Bagging—			
Foreign	2.75	"	2.85
Domestic	2.25	"	2.50
Bleachery Burlap	4.00	"	3.25
Scrap Burlap—			
Foreign	2.25	"	2.40
Domestic	2.50	"	—
Scrap Sisal	2.25	"	2.50
Scrap Sisal for Shredding	2.30	"	2.65
Wool Tares, Heavy	2.40	"	2.50
New Burlap Cuttings	3.75	"	4.00
Asst. Wool Pouches	3.00	"	3.25
Heavy baling bagging	2.60	"	2.90
Paper Mill Bagging	1.75	"	2.00
No. 2 Bagging	.75	"	.80

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	—	@	.03
Fancy Percales	.04	"	.04¼
New White No. 1	—	"	.07½
New Light Flannelettes	.05	"	.05¼
Silesias No. 1	.05	"	—
New Black Silesias	3.20	"	3.25
Soft Unbleached	.07	"	.07½
Blue Cheviots	.05	"	.05½
Fancy	.02	"	.02½
Washable	.02	"	.02¾
Cottons—According to Grades—			
Blue Overalls	.04¾	"	.05
New Black, Soft	.03	"	.03¼
Khaki Cuttings	.03	"	—
O. D. Khaki	.03	"	.03½
Corduroy	.02¾	"	.03
New Canvas	.06¾	"	.07¼
B. V. D. Cuttings	.07	"	.07¼

Domestic Rags (Old)

(F. o.b. Boston)

White No. 1—			
Repacked	2.75	"	3.75
Miscellaneous	2.40	"	2.60
White No. 2—			
Repacked	1.90	"	2.00
Miscellaneous	2.00	"	2.25
Twos and Blues	1.50	"	2.00
Old Blue Overalls	1.60	"	2.00
Thirds and Blues—			
Repacked	—	"	1.25
Miscellaneous	—	"	1.00
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	1.00	"	1.25
No. 2	—	"	1.10
No. 3	—	"	.90

Foreign Rags

(F. o. b. Boston)

Canvas	.04¼	@	—
Dark Cottons	(nominal)		
Dutch Blues	(nominal)		
New Checks and Blues	(nominal)		
Old Fustians	(nominal)		
Old Linsey Garments	(nominal)		
New Silesias	(nominal)		

CHICAGO

Waste Paper

(f.o.b. Chicago)

Shavings—			
No. 1 White Envelope cuttings	3.00	@	—
No. 1 Hard White	2.35	"	2.50
No. 1 Soft White	1.85	"	1.95
Ledger and Writings	.85	"	.95
Solid Books	.95	"	1.05
Blanks	1.50	"	1.60
Krafts	1.15	"	1.35
New Kraft Cuts	1.40	"	1.55
Overissue News	.90	"	1.10
Old Newspapers—			
No. 1 Folded News	.65	"	.75
No. 1 Mixed Paper	.40	"	.55
Roofing Stocks—			
No. 1	.95	@	1.00
No. 2	.85	"	.90

Sealing Containers

A new and revised edition of "Sealing of corrugated and fibre containers," by J. D. Malcolmson, has been issued by the Robert Gair Company, 155 East 44th street, New York. The 36-page booklet is an authoritative discussion of the subject and covers all kinds of closures. The author is technical director and container specialist of the Robert Gair Company, and chairman of the United States Department of Commerce simplification committee on box board calipers and standard sizes. The contents include detail discussion on adhesives for hand and automatic sealing, gummed paper tape, metal stitches and staples, and metal straps or wire.

A limited supply of the booklet is available from the Robert Gair Company, without charge.

Stixso Trade Names

A Philadelphia Quartz Company announcement states that Stixso trade names have been applied to its entire family of adhesives for container manufacture. Stixso AA is the leading silicate-clay adhesive, while Stixso DD is a special ratio silicate for corrugated paper board. The 41 deg. Baume grade, formerly marked "N" brand, and the 42 deg. Baume silicate marked "O" brand are now known as Stixso NN and Stixso OO respectively. As other adhesives in the line are developed, the prefix Stixso will be used for each, followed by the individual designation. The new nomenclature becomes effective July 1.